CURRICULUM VITAE

1. PERSONAL INFORMATION

Name:	Yuxiang Sun
Rank:	Professor
Campus address:	Department of Nutrition Texas A&M University (TAMU) 214C Cater-Mattil 2253 TAMU College Station, TX 77843-2253 Phone: 979-862-9143; E-mail: yuixiang.sun@tamu.edu
Date of joining TAMU:	Dec. 1, 2015

2. EDUCATION

Ph.D., University of Manitoba (Winnipeg, Canada), Molecular Endocrinology, 1996-2000
Advisor: Mary Lynn Duckworth, Ph.D.

M.Sc., University of Manitoba (Winnipeg, Canada), Physiology, 1993-1996
Advisor: Mary Lynn Duckworth, Ph.D.

M.D., Beijing Medical University (Beijing, China), 1982-1988

3. EXPERIENCE

At current Institution - Texas A&M University (TAMU):

Dec. 2015-Aug. 2018	Assistant Professor (tenure-track), Dept. of Nutrition and Food Science, Texas A& M University (TAMU)
Sept. 1, 2018- Aug. 31, 2022	Associate Professor (with tenure), Dept. of Nutrition (before Jan. 1, 2020, Department of Nutrition and Food Science), TAMU
Sept. 1, 2022-Present	**Professor, Dept. of Nutrition, TAMU** https://nutrition.tamu.edu/people/sun-yuxiang/
Jan. 10, 2023-Present	**Faculty Fellow of AgriLife Research, TAMU**
Jan. 2023-Present	**Associate Head for Graduate studies, Dept. of Nutrition, TAMU**

Current Appointment: 60% Research, 30% Teaching, and 10% Service

Position Description: my responsibilities in the Department of Nutrition include:
1) Research: I am expected to develop nationally competitive research programs in chronic metabolic diseases, publish high-impact publications, obtain extramural research funding, and contribute to collaborative research efforts. **2) Teaching:** I am expected to teach nutrition courses of the department, develop new courses, and mentor graduate students. **3) Service**: I am expected to serve on department/college committees, scientific reviews for grant panels and journals, and contribute to the scientific community at large.

Jan. 2016-2018 Full Member, Center for Translational Environmental Health Research (CTEHR), TAMU

Position Description: I have participated in symposia and seminars. I have collaborated with CTEHR faculty members (Drs. Stephen H. Safe and Robert Chapkin) that led to publications.

Dec. 2016-Present Member, Texas A&M Institute for Neuroscience (TAMIN), TAMU

https://tamin.tamu.edu/research/faculty-by-research-area/

https://tamin.sites.tamu.edu/wp-content/uploads/sites/28/2018/04/485_491-Opportunities.pdf

Position Description: My lab members present posters at the Annual Symposium of TAMIN every year, and I gave a talk at the 9th Annual Symposium of TAMIN. I have collaborated with 2 TAMIN faculty members (Drs. David J. Earnest, Jun Wang, Jianrong Li), the work with Dr. Earnest has led to a publication. Since 2018, a number of undergraduate students from Neuroscience are doing research in my lab, I offer NRSC 485 every semester.

2019-present Member, Texas A&M Center for Environmental Health Research (TiCER)

Position Description: TiCER is supported by P30 from NIEHS (1P30ES029067, PI: David Threadgill). I have participated in symposia, seminars, and monthly meetings. We are honored to be awarded 2 center vouchers and 1 Pilot grant. I have active collaborating projects with various TiCER members, e.g. Drs. David Threadgill, Stephen H. Safe, Robert Chapkin, Shaodong Guo, and Arul Jayaraman. Some of the collaborative initiatives have led to manuscripts and/or grant applications.

April. 2020-Present Member, Interdisciplinary Graduate Program in Genetics (GENE), TAMU https://genetics.tamu.edu/research/

Position Description: Expectations - attending Genetics Seminars, hosting speakers, assisting program committees, mentoring graduate students, teaching graduate GENE courses, participating in student recruitment, as well as serving on the thesis committee of Genetics graduate students. I have been attended GENE seminar series regularly, gave a GENE seminar in 2020, and interviewed graduate

students in 2021. Since 2019, a number of undergraduate students from GENE are doing research in my lab (GENE 491), and I offer GENE 491 every semester.

June 1, 2022-present Assocaite Member, Institute for Advancing Health through Agriculture (IHA), TAMU

Dec. 2015-Present **Adjunct appointment, USDA Children's Nutrition Research Center (CNRC), Departments of Pediatrics, Baylor College of Medicine (BCM)**
https://www.bcm.edu/people-search/yuxiang-sun-31481

Position Description: 2015-2018: I had an office and USDA grant account in CNRC. I served on a Ph.D. student thesis committee and 3 postdoctoral fellows' advisory committees. The adjunct appointment provides me with the convenience of access to BCM's core facilities and collaboration with BCM colleagues. I am attending CNRC weekly seminars via Zoom, serve as an internal reviewer, provide feedback for USDA grant applications of CNRC faculty, and contribute to USDA research accomplishment reports (115) that resulted from my previous USDA grants.

Past Positions and affiliations:

Apr. 2015-Feb. 2017	Associate member, Texas Medical Center Digestive Diseases Center
Jan. 2013-Nov. 2015	Member, Center of Drug Discovery, Baylor College of Medicine.
July 2011-April. 2017	Graduate faculty, Translational Biology and Molecular Medicine (TBMM) Graduate Program, Graduate School of Biomedical Sciences, Baylor College of Medicine.
Oct. 2008-Nov. 2015	**Assistant Professor (tenure-track)**, USDA Children's Nutrition Research Center (CNRC), Huffington Center on Aging (HCOA), Departments of Pediatrics & Molecular and Cellular Biology, Diabetes Research Center, Baylor College of Medicine (BCM). Houston, TX

Position Description: *My responsibilities for the position in CNRC were 100% research: I was expected to develop nationally competitive research programs in nutrition and diseases, publish high-impact publications, obtain extramural research funding, and train postdoctoral fellows.*

My accomplishments during my appointment as tenure-track assistant professor in CNRC included: **1**). Published 26 peer-reviewed publications, many of which are in prestigious journals such as *Aging Cell, Aging, PNAS, JCI*; **2**). Secured $2,288,750 total grant awards, which included: 2 competitive USDA grants, serving as lead scientist in the 2014-2019 grant; 2 AHA grants, an ADA grant, and several pilot grants. **3**). BCM accepts a very limited number of graduate students each year. Being a junior faculty, it was an honor to be selected as a thesis advisor of a Ph.D.

student. My Ph.D. student, Ms. Geetali Pradhan, successfully obtained a very competitive student fellowship, conference travel awards, and graduated in April 2017 with an impressive publication record (3 first author and 7 co-author papers). Dr. Pradhan now is a manager of Scientific Innovations at Force Communications, Indianapolis. The joint-training Ph.D. student Xiaojun Ma was very productive as well (4 first author and 4 co-author papers), and Dr. Ma is now a tenured associate professor in China, leading active research and clinical programs. I am very proud that **5 of my former fellows have been offered tenure-track faculty positions immediately following their training in my lab, and 1 has been promoted to tenured Associate Professor.**

Aug. 2007-Sept. 2008	Assistant Professor (research-track), Huffington Center on Aging, Department of Molecular and Cellular Biology, Baylor College of Medicine. Houston, TX
April 2006-July 2007	Instructor, Huffington Center on Aging, Department of Molecular and Cellular Biology, Baylor College of Medicine. Houston, TX
2003-2005	Research Associate, Huffington Center on Aging; Baylor College of Medicine; Houston, TX.
2000-2003	Postdoctoral Fellow, Huffington Center on Aging; Baylor College of Medicine; Houston, TX *Advisor: Roy G. Smith, Ph.D.*
1988-1991	Resident, Internal Medicine – Cardiology, First Teaching Hospital of Beijing Medical University, Beijing, China

---

4. RESEARCH

My current appointment consists of 60% Research

4.1 Program and Impact Statement:

My research expertise/experiences include molecular biology, transgenic/gene knockout technology, endocrinology, metabolism, neuroendocrinology, inflammation, and aging. In general, my scientific discipline is within metabolism and aging, and my work over the last 20 years has mostly focused on gut hormone ghrelin. I have made substantial contributions to the body of work of ghrelin and ghrelin receptor (*aka* growth hormone secretagogue receptor, GHS-R). I am honored to be considered a leader in the ghrelin field by my peers.

Overview: The incidence of obesity and diabetes has reached epidemic proportions worldwide. The primary cause of diabetes is obesity, which often leads to insulin resistance. Insulin resistance eventually causes pancreatic beta-cell failure, which subsequently leads to diabetes. Ghrelin is the only known hormone that increases energy intake and promotes obesity, thus this is called "hunger hormone"; ghrelin has important implications in metabolic diseases. I generated a series of mouse models for ghrelin and GHS-R (a dozen mouse lines); the generation and characterization of ghrelin and GHS-R global knockout mice were considered as pioneering work in the field. I also spearheaded the discoveries of the novel functions of ghrelin signaling in insulin secretion, thermogenesis, inflammation, and aging metabolism, which were considered as

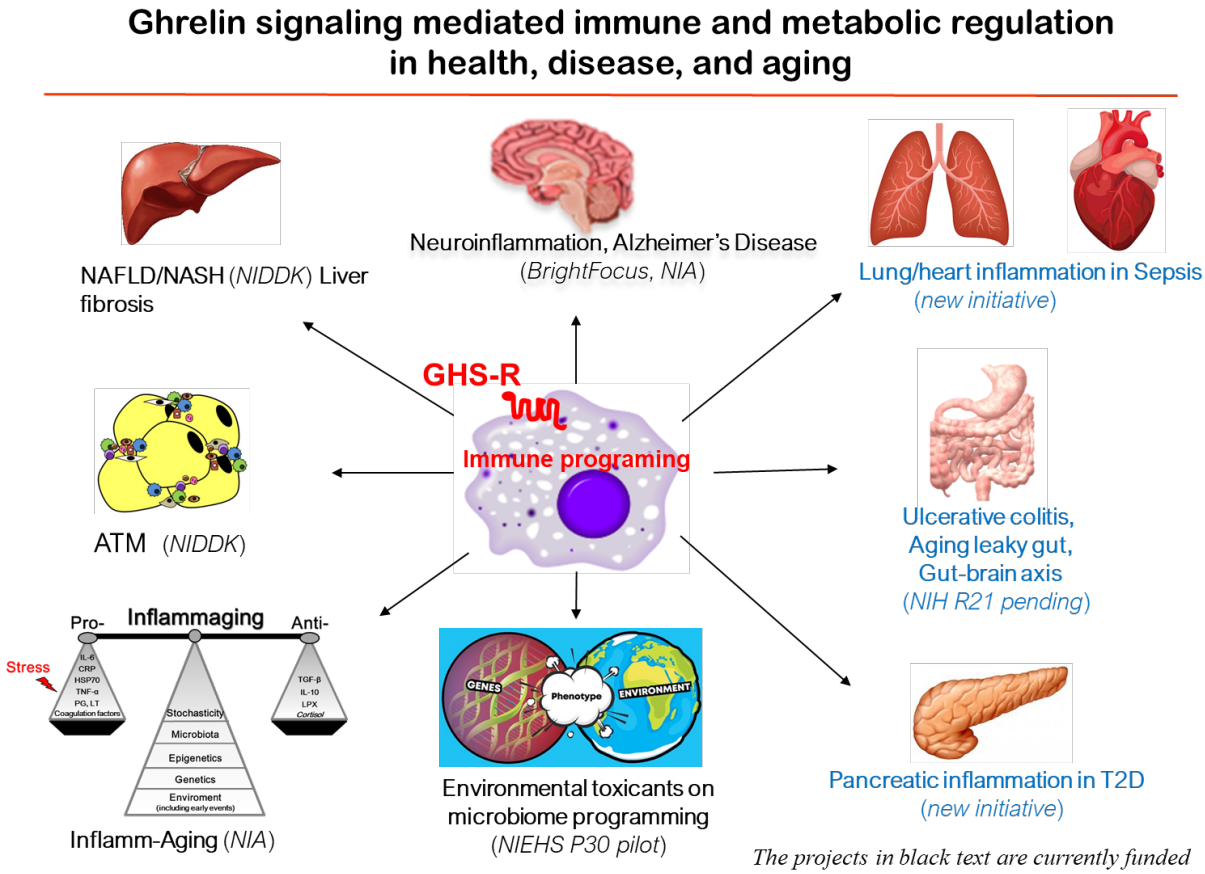
milestone work in the field. These novel findings suggest that ghrelin has paramount importance in health and disease; the GHS-R is a very promising therapeutic target for obesity, diabetes, inflammation and aging.

My past work: I generated global knockout mice for ghrelin and the ghrelin receptor (*MCB* 2003*, PNAS* 2004), which are the first set of mouse tools for *in vivo* study of ghrelin. Subsequently, my work showed that ablation of ghrelin improves pancreatic beta-cell function, reducing hyperglycemia of diabetic mice (*Cell Metab*. 2006), which was first *in vivo* evidence that ghrelin is a player in diabetes. Obesity is centered in adipose tissues, which consist of white adipose tissue (WAT) and brown adipose tissue (BAT). While WAT stores energy, BAT burns energy to generate heat (thermogenesis). We found that ablation of GHS-R increases BAT thermogenesis during aging, leading to a lean and insulin-sensitive phenotype (*Aging Cell* 2011; *Aging* 2014). Our study further revealed that GHS-R deletion in neurons totally abolishes diet-induced obesity by regulating sympathetic activity-associated thermogenesis (*Diabetes* 2016). We also discovered that deletion of GHS-R shifts macrophages from pro-inflammatory to anti-inflammatory, reducing adipose and hepatic inflammation (*Nutrition & Diabetes* 2013, *Aging* 2016, *Int. J. Mol. Sci.* 2017). Thus, GHS-R ablation switches adipose tissues from obesogenic to thermogenic and shifts macrophages from pro-inflammatory to anti-inflammatory. Metabolic decline, chronic inflammation and gut dysbiosis are hallmarks of aging and age-associated diseases. We have found that the expression of ghrelin and GHS-R are correlated with aging, and ghrelin signaling alters mitochondrial function, inflammation, and gut dysbiosis in aging (*Adv Exp Med Biol.* 2018; *J of Gerontol.* 2020; *Aging* 2021). Our work collectively established that ghrelin is not only a hunger hormone, but also an important nutrient sensor and metabolic regulator, suggesting that targeting ghrelin-signaling may represent a novel strategy for treatment of obesity, diabetes, inflammation, and aging-associated dysfunctions.

My current work (as illustrated below): My current research projects cover nutritional regulation, energy metabolism, and pathophysiology of obesity, diabetes, inflammation, and aging, with a strong emphasis on the newly emerged interdisciplinary research frontiers of immunometabolism and inflamm-aging. To further define the roles and pertinent mechanisms of ghrelin-signaling in health and disease, we will leverage our state-of-the-art mouse/cell tools and expertise/experience in a wide range of cutting-edge technologies to study ghrelin signaling in the following important areas: 1) Glycemic regulation and insulin resistance; 2) Macrophage-mediated adipose tissue inflammation, nonalcoholic steatohepatitis, and inflammatory bowel disease; 3) Neuroinflammation and neurodegenerative diseases, such as Alzheimer's disease; 4) Environmental toxins on immune reprogramming. *The long-term goals of my team are to develop new interventions to prevent/treat chronic diseases, ultimately improving quality of life of humans.*

Summary of scholar accomplishments:

1). **Publications**: Throughout my career, not only have I been able to maintain high productivity, but also to deliver high-quality work. I have published over **120** peer-reviewed papers (**62** in last 5 years), many of which are in top-tier journals such as *PNAS, Cell Metabolism*, *Aging cell, Diabetes*, *Aging, Journal of Gerontology,* and prestigious reviews such as *Endocrine Reviews*, *Trends Endocrinol. Metab.*, *Molecular Metabolism*, etc. I have also published 3 comprehensive book chapters. My work is highly regarded by the scientific community, among the highest-referenced literature in ghrelin research. I am honored that Nobel Prize Laureates Drs. Joseph L. Goldstein, and Michael S. Brown have cited our work at least 8 times. My publications have received **7842** citations with an H-index of **41** (2004 PNAS – 838 times; 2003 MCE paper – 771 times; *Cell Metab.* – 417 times).



2). **Grants**: My research has generated steady funding supports from federal and private funding agencies, totaling **$18 million**, among which over **$8 million** is for my research (**$6 million** in last 5 years). I currently serve as Principal Investigator (PI) on: NIH/NIDDK R01 on immunometabolism (2%); NIH/NIA R01 on inflamm-aging (3%); competitive administrative supplement from NIH/NIA on Alzheimer's disease; BrightFocus Foundation grant on neuroinflammation; and various local grants. My NIH R01s received 2% and 3% scores indicates the significance of my work and my standing in the field. I have also actively contributed to many collaborative projects. I currently serve as Co-Investigator (Co-I) on: 4 R01s from NIDDK (2 from TAMU, 1 from Georgia and from Michigan), 1 R01 from NC1 (Michigan), and 1 R21 from NIA (TAMU). Previously, I was funded by AHA, ADA, NIH, USDA, AFAR, and various institutional pilot grants. In addition, I helped a Research Assistant Professor in my lab to successfully obtain a NIH R21 grant and a DOD grant.

3). **Recognitions**: In recognition of my scholarship credentials, I have been invited to give 88 talks (29 in last 4 years), 21 of which are as a keynote speaker/organizer at national or international meetings/symposia. I have been invited to serve as a grant panel member for the American Diabetes Association (ADA) and the American Federation for Aging Research (AFAR), and as *ad hoc* reviewer for 8 NIH study sections (e.g., IPOD, MCE. CSME, and fellowship study sections), and 20 other national and international granting agencies. I have just been nominated to serve as standing member for NIH study section CSME starting July 2022. I am also invited to serve on editorial boards of several journals, and as guest editor for several special issues/topic collections. I am considered a leader in the ghrelin field, not only because of my productivity and quality of work, but also because I have always been generously supportive of others (in sharing animal models, reagents, ideas). Many collaborations have led to high-impact publications such as *JCI*, *PNAS*, *Nature Communications*, *Diabetes,* etc., as well as various multidisciplinary grants. I believe that the best science is produced by collaborative minds, and collaboration is the best way to generate synergy and to tackle the most important questions.

Summary of impact and personal reflection on research: My scientific contributions have helped to significantly advance the understanding of ghrelin biology, which has provided a solid scientific premise for targeting ghrelin signaling in prevention and treatment of metabolic and inflammatory diseases. My work is impactful, not only because of the quantity of my publications, but more importantly because of the originality and quality of my work. My work has been recognized as pioneering work and milestone discoveries, and I am regarded as a leader in my field. In addition to my own work, I have made important contributions to research programs of others locally, nationally, and internationally. My leadership role in the field has grown steadily through my career and shows an exciting upward trajectory. *I believe that my passion and qualifications will ensure my continued success in science; I strive to maintain scholarship excellence and continue to make impactful discoveries to benefit human health and to improve quality of life.*

4.2. Publications and Professional Output

Summary of Published Scholarly Work

Type	**Since Last Promotion** ***(Sept. 1, 2018– present)***	Since joining TAMU *(Dec. 1, 2015– present)*	**Career**

Refereed/Peer-Reviewed	**58**	74	**121**
Editor-reviewed	**4**	4	**13**
Scientific Abstracts	**23**	32	**82**
Books			
Chapters in Books	**2**	2	**4**
Research Agency Publ. (news release)	**4**	4	**8**

Google scholar citation: Total citations 78422 and H-index 41
http://scholar.google.com/citations?user=AvEn46EAAAAJ&hl=en

The h-index is a means of measuring scientists' impact on their field, determined from two quantities: the number of publications by a scientist and the number of times those publications have been cited. *According to a 2019 article of American Association for Clinical Chemistry (AACC): "on average, assistant professors have an h-index of 2-5, associate professors 6-10, and full professors 12-24".* My H-index of 36 is considered outstanding in my field.

Impact factor (IF): Impact Factors (IF) are used to measure the importance of a journal by calculating the number of times selected articles are cited within the last few years. The higher the impact factor, the more highly ranked the journal. The Journal Citation Reports (JCR) 2017 database showed that only 1.9% of journals have an IF of 10 or higher; the top 5% of journals have an IF of 6 or higher, and the top 40% of journals have an IF of 2 or greater. In other words, an IF of at least 2 is considered to be above average). https://mdanderson.libanswers.com/faq/26159

Field Citation Ratio (FCR) https://app.dimensions.ai/discover/publication, a citation-based measure of scientific influence of one or more articles, which is believed to be a better metrics to assess scholarly impact of publications across fields. It is calculated by dividing the number of citations a paper has received by the average number received by documents published in the same year and in the same Fields of Research (FoR) category. FCR value of 1.0 means the paper has received exactly the same number of citations as the average of the field, FCR of 2.0 means the paper has received twice as many citations as the average for the Fields of Research code(s). According to Dr. Bruce E. Herbert, Director of TAMU Libraries, the mean FCR for TAMU is 2.34. The average FCR value of all my publications is 6.16. The specific FCR values is shown below. e.g., 2004 *PNAS* is 110, 2003 *MCE* is 94, and 2006 *Cell Metabolism* is 59.

Title	**Year**	**Total Citation**	**FCR** (5/6/2021)
Ghrelin stimulation of growth hormone release and appetite is mediated through the growth hormone secretagogue receptor	2004	**838**	**110**
Y Sun, P Wang, H Zheng, RG Smith			
Proceedings of the National Academy of Sciences 101 (13), 4679-4684			
Deletion of ghrelin impairs neither growth nor appetite	2003	**751**	**94**
Y Sun, S Ahmed, RG Smith			
Molecular and cellular biology 23 (22), 7973-7981			

Ghrelin (review)	2015	**837**	**64**
TD Müller, R Nogueiras, ML Andermann, ZB Andrews, SD Anker, ...			
Molecular metabolism 4 (6), 437-460			
Des-acyl ghrelin induces food intake by a mechanism independent of the growth hormone secretagogue receptor	2006	**463**	**36**
K Toshinai, H Yamaguchi, Y Sun, RG Smith, A Yamanaka, T Sakurai, ...			
Endocrinology 147 (5), 2306-2314			
Ablation of ghrelin improves the diabetic but not obese phenotype of ob/ob mice	2006	**417**	**59**
Y Sun, M Asnicar, PK Saha, L Chan, RG Smith			
Cell metabolism 3 (5), 379-386			
Characterization of adult ghrelin and ghrelin receptor knockout mice under positive and negative energy balance	2008	**289**	**40**
Y Sun, NF Butte, JM Garcia, RG Smith			
Endocrinology 149 (2), 843-850			
Ghrelin promotes thymopoiesis during aging	2007	**229**	**21**
VD Dixit, H Yang, Y Sun, AT Weeraratna, YH Youm, RG Smith, DD Taub			
The Journal of clinical investigation 117 (10), 2778-2790			
Ghrelin: much more than a hunger hormone (review)	2013	**275**	**31**
G Pradhan, SL Samson, Y Sun			
Current opinion in clinical nutrition and metabolic care 16 (6), 619			
Ablation of ghrelin receptor reduces adiposity and improves insulin sensitivity during aging by regulating fat metabolism in white and brown adipose tissues	2011	**185**	**36**
L Lin, PK Saha, X Ma, IO Henshaw, L Shao, BHJ Chang, ED Buras, Y Sun			
Aging cell 10 (6), 996-1010			

4.2.1 Publications

\# ***Graduate students (under my direct supervision) contribute to the original articles***

\#\# ***Undergraduate students (under my direct supervision) contribute to the original articles***

& ***Postdoctoral fellows (under my direct supervision) contribute to the original articles***

The authorship protocol of my discipline*:* The most significant authors of a paper in my discipline are the ones listed first and last. For original articles, the first author is the trainee who conducts most experiments and writes the paper; the last author is the corresponding author who conceptualizes the study, writes the paper, provides financial support, and has legal responsibility for the work. I am the corresponding author for all papers where my name appears last unless noted otherwise.

Full papers (*Listed from oldest to most recent*)**:**
a. Published in peer-reviewed journals:

The following publications before TAMU:

1. Wu W, Zhang X, Sun Y and Gao S (1990). Clinical characteristic analysis of digestive tract bleeding of aged patients. **Clinical Medicine** 10:203-204.

2. Sun Y, Robertson MC and Duckworth ML (1998). The effects of epidermal growth factor/transforming growth factor α on the expression of rat placental lactogen I and II mRNAs in a rat choriocarcinoma cell line. **Endocrine Journal** 45:297-306.

3. Shah P, Sun Y, Szpirer C and Duckworth ML (1998). Rat placental lactogen II gene: characterization of gene structure and placental-specific expression. **Endocrinology** 139: 967-973.

4. Sun Y and Duckworth ML (1999). Identification of a placental-specific enhancer in the rat placental lactogen II gene that contains binding sites for members of the Ets and AP-1 (activator protein 1) families of transcription factors. **Molecular Endocrinology** 13:385-399. (A highly regarded mechanistic journal for endocrinology, IF 6.90)

5. Sun Y, Ahmed S and Smith RG (2003). Deletion of ghrelin impairs neither growth nor appetite. **Molecular and Cellular Biology 23:7973-7981.** (A top journal for basic research, IF 6.93) **(FCR 94)**

Impact of the paper: This was the very first ghrelin knockout mouse model ever generated, which enabled us to define the *in vivo* function of ghrelin for the first time. Surprisingly, our findings indicated that ghrelin is dispensable under a normal metabolic state, because ghrelin knockout are not anorexic, dwarf, or thin. This paper has led to many subsequent important discoveries, including ghrelin is essential for growth hormone-mediated survival under calorie-restriction, as well as ablation of ghrelin in adult mice does not decrease food intake, body weight, under high fat diet by Nobel Prize Laureates Drs. Joseph L. Goldstein, and Michael S. Brown. This unique mouse model has been used worldwide in both academia and industry (e.g., Merck & Co, Eli Lilly), provided an essential tool for defining the *in vivo* functions of ghrelin, investigating ghrelin's roles/mechanisms in various diseases, assessing the specificity of ghrelin assays and efficacy of drug candidates, etc.

This paper was cited by Nobel Prize Laureates Drs. Joseph L. Goldstein, and Michael S. Brown in their following 4 high profile publications: PNAS 2010, 107:7467; JBC 2012, 287:17942; JBC 2012, 287:22418; Cell Metab. 2014, 20:54.

6. Sun Y, Wang P, Zheng H and Smith RG (2004). Growth Hormone Secretagogue Receptor (GHS-R) mediates ghrelin's effects on GH release and appetite. **Proc Natl Acad Sci U S A. 101:4679-4684.** (A very prestigious journal for basic research, IF 9.66) **(FCR 110)**

Impact of the paper: This paper has unequivocally demonstrated that ghrelin's effects on growth hormone release and food intake are mediated through GHS-R. GHS-R knockout has reduced bodyweight and IGF levels. This study underscored that GHS-R and Ghrelin

have differential phenotypes, which has inspired the field to look for ligand-dependent and -independent functions. This was the first ghrelin receptor knockout mouse model ever generated, and the mice have been used worldwide in both academia and industry (e.g., Merck & Co, Eli Lilly). This unique mouse model has provided an essential tool for defining the *in vivo* functions of ghrelin, investigating ghrelin's roles/mechanisms in various diseases, assessing the specificity/efficacy of drug candidates.

This paper was cited by Nobel Prize Laureates Drs. Joseph L. Goldstein, and Michael S. Brown in their publication of Cell Metab. 2014, 20:54.

7. Smith RG, Sun Y, Betancourt L and Asnicar MA (2004). Growth hormone secretagogues: prospects and potential pitfalls. **Best Pract Res Clin Endocrinol Metab.** 18:333-347.

8. Smith RG, Betancourt L and Sun Y (2005). Molecular endocrinology and physiology of the aging central nervous systems. **Endocrine Reviews** 26:203-250. (The most authoritative review for endocrinology, IF 15.17) **(FCR 14)**

9. Smith RG, Jiang H and Sun Y (2005). Developments in ghrelin biology and potential clinical relevance. **Trends Endocrinol. Metab.** 16:436-442. (A highly regarded review journal, IF 10.89) **(FCR 14)**

10. Toshinai K, Yamaguchi H, Sun Y, Smith RG, Yamanaka A, Sakurai T, Date Y, Mondal MS, Shimbara T, Kawagoe T, Murakami N, Miyazato M, Kangawa K and Nakazato M (2006). Des-acyl Ghrelin Induces Food Intake by a Mechanism Independent of the Growth Hormone Secretagogue Receptor. **Endocrinology** 147:2306-2314. **(FCR 36)**

11. Wang G-L, Shi X, Salisbury E, Sun Y, Albrecht JH, Smith RG, Timchenko NA (2006). Cyclin D3 maintains growth-inhibitory activity of C/EBPalpha by stabilizing C/EBPalpha-cdk2 and C/EBPalpha-Brm complexes. **Molecular and Cellular Biology** 26:2570-2582. **(FCR 12)**

12. Sun Y, Asnicar M, Saha PK, Chan L, Smith RG (2006). Ablation of Ghrelin Gene Improves the Diabetic but not Obese Phenotype of *ob/ob* Mice. **Cell Metabolism 3:379-386.** (The most prestigious journal for metabolism, IF 18.16) **(FCR 59)**

Impact of the paper: This was the first *in vivo* evidence that ghrelin has an important role in diabetes, regulating insulin secretion in pancreatic islets; which is considered a milestone discovery. Ghrelin was discovered as a hunger hormone, before this report, most research in the field was focusing on the effects of ghrelin on energy homeostasis. This work has expanded ghrelin's function into the field of diabetes, which adds a new dimension to ghrelin biology. This work has paved the way for a great volume of work regarding ghrelin's role in glucose homeostasis; e.g., this discovery showed that ghrelin secretion is enhanced under low glucose conditions, and ghrelin is required for survival of starvation. Nobel Prize Laureates Drs. Joseph L. Goldstein, and Michael S. Brown reported that ghrelin prevents severe life-threatening hypoglycemia during severe caloric restriction.

Article selected for commentary in the same issue of Cell Metabolism 3: 301-302.

There are many new releases about the article, just to list a few below:

- https://www.news-medical.net/news/2006/05/11/17919.aspx

Ghrelin involved in development of diabetes

- https://www.sciencedaily.com/releases/2006/05/060510091429.htm
  Ghrelin, a hormone long considered a key player in obesity, may instead take a major role in maintaining the balance between insulin and glucose and the development of diabetes, said Baylor College of Medicine researchers in a report in the current issue of the journal Cell Metabolism.
- http://www.diabetesincontrol.com/ghrelin-involved-in-development-of-diabetes/
  "Everybody has been pushing the connection between obesity and ghrelin," said Dr. Roy G. Smith, director of the BCM Huffington Center on Aging, "Companies have been developing ghrelin antagonists as anti-obesity drugs. Now these drugs may have a value in treating diabetes." The downside is that the drugs may not forestall obesity.
- https://www.eurekalert.org/pub_releases/2006-05/bcom-gap050406.php
  Ghrelin: A player in diabetes but not obesity?

This paper was cited by Nobel Prize Laureates Drs. Joseph L. Goldstein, and Michael S. Brown in their following 2 high-profile publications: PNAS 2010, 107:7467 and Cell Metab. 2014, 20:54.

13. Wang G-L, Shi X, Salisbury E, Sun Y, Albrecht JH, Smith RG, Timchenko NA (2007). Growth Hormone Corrects Proliferation and Transcription of Phosphoenolpyruvate Carboxykinase in Livers of Old Mice via Elimination of CCAAT/Enhancer-binding Protein α-Brm Complex. **Journal of Biological Chemistry** 282: 1468-1478.

14. Sun Y*, Garcia JM, and Smith RG (2007). Ghrelin and growth hormone secretagogue receptor expression in mice during aging. **Endocrinology** 148:1323-1329. (*corresponding author) **(FCR 18)**

15. Szentirmai É, Kapás L, Sun Y, Smith RG, Krueger JM (2007). Spontaneous sleep and homeostatic sleep regulation in ghrelin knockout mice. **Am J Physiol Regul Integr Comp Physiol** 293: R510-R517.

16. Dixit VD, Yang H, Sun Y, Weeraratna AT, Youm YH, Smith RG and Taub DD (2007). Ghrelin promotes thymopoiesis during aging. **Journal of Clinical Investigation** 117:2778-2790. (A very prestigious journal for basic/clinical research, IF 12.78) **(FCR 21)**
Article Selected as Editor's Highlight in October issue of J. Clin. Invest.

17. Sun Y*, Asnicar M and Smith RG (2007). Central and peripheral roles of ghrelin on glucose homeostasis. **Neuro-endocrinology** 86:215-228 (review). ***corresponding author** **(FCR 12)**

18. Smith RG, Sun Y, Jiang H, Albarran-Zeckler R, and Timchenko N (2007). Ghrelin receptor (GHS-R 1a) agonists show potential as interventive agents during aging. **Ann N Y Acad Sci.** 1119:147-164.

19. Sun Y, Butte NF, Garcia JM, and Smith RG (2008). Characterization of adult ghrelin and ghrelin receptor knockout mice under positive and negative energy balance. **Endocrinology** 149:843-850. **(FCR 40)**

Impact of the paper: In this paper, we performed a comprehensive analysis of ghrelin and GHS-R knockout mice under a positive energy state of diet-induced obesity and a negative energy state of calorie restriction. Under positive energy state, only GHS-R knockout, not ghrelin knockout, showed reduced body weight. Under a negative energy state, both GHS-R and ghrelin knockout mice showed reduced glucose. The differential effects of ghrelin and GHS-R under different metabolic states are very intriguing, which reveals the complexity of ghrelin biology. This study also shed light on 2 important concepts: 1. GHS-R antagonists may be a promising strategy for weight control; 2. Ghrelin signaling is required to maintain glucose homeostasis under energy deficit. This work has inspired researchers in the field to carefully examine ghrelin and GHS-R under different states and conditions.

This paper was cited by Nobel Prize Laureates Drs. Joseph L. Goldstein, and Michael S. Brown in their publication of PNAS 2010, 107:7467.

20. Yang H, Dixit VD, Patel K, Vandanmagsar B, Collins G, Sun Y, Smith RG, Taub DD (2008). Reduction in hypophyseal growth hormone and prolactin expression due to deficiency in ghrelin receptor signaling is associated with Pit-1 suppression: Relevance to the immune system. **Brain Behav Immun.** 22: 1138-1145.

21. Youm Y, Yang H, Sun Y, Smith RG, Manley NR, Vandanmagsar B, and Dixit VD (2009). Deficient Ghrelin receptor-mediated signaling compromises thymic stromal cell microenvironment by accelerating thymic adiposity. **Journal of Biological Chemistry** 284:7068-7077. (FCR 6)

22. Yang H, Youm Y, Sun Y, Rim J, Galban C, Vandanmagsar B, Dixit VD (2009). Axin expression in thymic stromal cells contributes to age-related increase in thymic adiposity and is associated with reduced thymopoiesis independently of ghrelin signaling. **Journal of Leukocyte Biology** 85:928-938.

23. Hill JT, Mastracci TL, Vinton C, Doyle ML, Anderson KR, Loomis ZL, Schrunk JM, Minic AD, Prabakar KR, Pugliese A, Sun Y, Smith RG, Sussel L. (2009). Ghrelin is dispensable for embryonic pancreatic islet development and differentiation. **Regul Pept** 157:51-56.

24. Szentirmai E, Kapás L, Sun Y, Smith RG, Krueger JM (2009). The preproghrelin gene is required for the normal integration of thermoregulation and sleep in mice. **Proc Natl Acad Sci U S A.** 106: 14069-14074. (A top journal for basic research, IF 9.66). **(FCR 20)**

25. Szentirmai E, Kapás L, Sun Y, Smith RG, Krueger JM (2010). Restricted feeding-induced sleep, activity and body temperature changes in normal and preproghrelin-deficient mice. **Am J Physiol Regul Integr Comp Physiol** 298: R467-R477. **(FCR 10)**

26. Kohjima M, Sun Y & Chan L (2010). Increased food intake leads to obesity and insulin resistance in the Tg2576 Alzheimer's disease mouse model. **Endocrinology** 151:1532-1540. **(FCR 10)**

27. Delhanty P, Sun Y, Visser j, Kerkwijk A, Huisman M, Ijcken W, Swagemakers S, Smith RG, Themmen AP, Lely AJ (2010). Unacylated Ghrelin Rapidly Modulates Lipogenic and Insulin Signaling Pathway Gene Expression in Metabolically Active Tissues of GHSR

Deleted Mice. **PLoS ONE** 5: e11749. **(FCR 19)**

28. Shin YK, Martin B, Kim W, White CM, Ji S, Sun Y, Smith RG, Sévigny J, Tschöp MH, Maudsley S, Egan JM. (2010) Ghrelin is produced in taste cells and ghrelin receptor-null mice show reduced taste responsivity to salty (NaCl) and sour (citric acid) tastants. **PLoS ONE** 2010 5:e12729. **(FCR 10)**

29. *Ma X*[#], Lin L[&], Qin G, Lu X, Fiorotto M, Dixit VD, Sun Y (2011). Ablations of ghrelin and ghrelin receptor exhibit differential metabolic phenotypes and thermogenic capacity during aging. **PLoS ONE** 6:e16391. **(FCR 15)**

Impact of the paper: This study showed that deletion of ghrelin or GHS-R results in differential effects on thermogenesis: GHS-R ablation activates thermogenesis in brown fat, while ghrelin ablation has little effect. This was the first *in vivo* evidence that the GHS-R regulates energy homeostasis by altering thermogenesis, but not food intake. This study uncovered the surprising fact that ghrelin and GHS-R have differential effects in thermoregulation; it shed light on the complexity of ghrelin biology and provided a strong scientific premise for further mechanistic investigation of the differential roles of ghrelin and GHS-R in metabolism.

Article selected as "Novel & Newsworthy Top Picks" at 50th Annual Meeting of ***American Society for Cell Biology,*** *published as NEWS highlights by a number of science websites.*

30. Albarran-Zeckler RG, Sun Y, Smith RG (2011). Physiological roles revealed by ghrelin- and ghrelin receptor-deficient mice. **Peptides** 32:2229-35. **(FCR 8.05)**

31. Lin L[&], Saha PK, *Ma X*[#], Henshaw IO, Shao L, Chang BH, Buras ED, Tong Q, Chan L, McGuinness OP, Sun Y (2011). Ablation of ghrelin receptor reduces adiposity and improves insulin sensitivity during aging by regulating fat metabolism in white and brown adipose tissues. **Aging Cell** 10:996-1010 (The premier journal for aging, IF 10.89) **(FCR 36)**

Impact of the paper: This was the first study to define that GHS-R regulates thermogenesis, which is considered a milestone discovery. In this study, we found that old GHS-R null mice are lean and insulin-sensitive, and the phenotype is more pronounced during aging. Given that ghrelin administration increases food intake, it had been widely anticipated that GHS-R regulates bodyweight by altering energy intake. Surprisingly, we found that the food intake of GHS-R null mice was not reduced; rather, the reduced body weight of the null mice was due to increased thermogenesis. This finding challenged the dogma that ghrelin signaling regulates energy homeostasis by controlling food intake, revealed that *in vivo* GHS-R regulates energy homeostasis by altering energy expenditure. This work has fundamentally changed the understanding of ghrelin's roles in body weight regulation and obesity control, which is critical knowledge required for determination of the application/feasibility of GHS-R antagonists.

Featured in "Nutrition and Your Child", publication of USDA/ARS

32. Chacko SK, Haymond MW, Sun Y, Marini JC, Sauer PJJ, *Ma X*[#], Sunehag AL (2012). Effect of ghrelin on glucose regulation in mice. **Am J Physiol Endocrinol Metab.** 302:E1055-1062.

33. Lin L[&], Pang W, Chen K, Wang F, Wang F, Gengler J, Sun Y and Tong Q (2012). Adipocyte Expression of PU.1 Transcription Factor Causes Insulin Resistance through Up-regulation of Inflammatory Cytokine Gene Expression and ROS Production. **Am J Physiol Endocrinol Metab.** 302:E1550-9.

34. van der Velde M, van der Eerden BC, Sun Y, Almering JM, van der Lely AJ, Delhanty PJ, Smith RG, van Leeuwen JP (2012). An age-dependent interaction with leptin unmasks ghrelin's bone-protective effects. **Endocrinology** 153: 3593-3602.

35. Lu X, Zhao X, Feng J, Liou AP, Anthony S, Pechhold S, Sun Y, Lu H, Wank SA (2012). Postprandial Inhibition of Gastric Ghrelin Secretion by Long-chain Fatty Acid (LCFA) Through GPR 120 in Isolated Gastric Ghrelin Cells and Mice. **American Journal of Physiology - Gastrointestinal and Liver Physiology** 303:G367-76. **(FCR 11)**

36. *Ma X*[#], Lin Y, Lin L[&], Qin G, Pereira FA, Haymond MW, Butte NF, Sun Y (2012). Ablation of ghrelin receptor in leptin-deficient *ob/ob* mice has paradoxical effects on glucose homeostasis when compared with ablation of ghrelin in *ob/ob* mice. **Am J Physiol Endocrinol** 303: E422-E431 (FCR 7.12)

Impact of the paper: This study showed that deletion of ghrelin or GHS-R in leptin-deficient background results in differential effects on glucose regulation, suggesting that ghrelin's effect on insulin may be independent of GHS-R. This study was the first to bring awareness that ghrelin and GHS-R have differential effects on glycemic regulation, which has revealed the complexity of ghrelin biology.

Featured on USDA/ARS website:
https://www.ars.usda.gov/research/publications/publication/?seqNo115=264309

37. Lin L[&], Sun Y. Thermogenic characterization of ghrelin receptor null mice (2012). **Methods Enzymol.** 514:355-70. PubMed PMID: 22975064.

38. Porporato PE, Filigheddu N, Gnocchi VF, Reano S, Ardisson GB, Fornaro M, Ronchi G, Fagoonee S, Chianale F, Baldanzi G, Surico N, Perroteau I, Smith RG, Sun Y, Geuna S, Graziani A (2013). Acylated and unacylated ghrelin impair skeletal muscle atrophy in mice. **Journal of Clinical Investigation** 123:611-22. (A premier journal for basic/clinical research, IF 12.78) **(FCR 33)**

39. Pradhan *G*[#], Samson SL, Sun Y (2013). Ghrelin: much more than a hunger hormone. **Curr Opin Clin Nutr Metab Care**. 16:619-624. PMID:24100676. (A well-regarded review journal by clinicians, IF 5.68) **(FCR 31)**

Impact of the paper: This paper is the most comprehensive review featuring the non-orexigenic functions of ghrelin system.

40. *Ma X*[#], Lin L[&], Yue J[&], Pradhan G[#], Qin G, Minze LJ, Wu H, Sheikh-Hamad D, Smith CW, Sun Y (2013). Ghrelin receptor regulates HFCS-induced adipose inflammation and insulin resistance. **Nutrition & Diabetes** 3:e99. (Nature press) **(FCR 15)**

Impact of the paper: This paper was the first to demonstrate that GHS-R is a novel immune regulator. We found that GHS-R deletion attenuates diet-induced adipose and hepatic inflammation by shifting macrophages from pro-inflammatory M1 to anti-inflammatory M2. In addition to adding a new functional aspect to ghrelin signaling, this study led us to solving a long-puzzling phenomenon in the field. Ghrelin is known to have effects in many tissues, including adipose tissues and liver, but GHS-R expression shows very low or no expression in adipocytes and hepatocytes. This has mystified the entire field for over a decade: how does ghrelin affect the tissues with such minimal GHS-R presence? We found that GHS-R is expressed in macrophages, and its expression increases under diet-induced obesity. Based on this critical evidence, we developed a provocative hypothesis that the effects of ghrelin signaling in adipose tissues and liver are due to the infiltration of GHS-R expressing macrophages; the cross-talks between macrophages with adipocytes or hepatocytes leads to pathological changes in those tissues. This proposal is now funded by an NIH/NIDDK R01 grant.

41. Lin D, Wang Q, Ran H, Liu K, Wang Y, Wang J, Liu Y, Chen R, Sun Y, Liu R, Ding F (2014). Abnormal Response to the Anorexic Effect of GHS-R Inhibitors and Exenatide in Male Snord116 Deletion Mouse Model for Prader-Willi Syndrome. **Endocrinology** 155:2355-62. PMID:24735326.

42. Lin L[&], Nuotio-Antar AM, *Ma X*[#], Liu F, Fiorotto ML, Sun Y (2014). Ghrelin Receptor Regulates Appetite and Satiety during Aging in Mice by Regulating Meal Frequency and Portion Size but Not Total Food Intake. **Journal of Nutrition** 144: 1349–1355.

Featured on World Biomedical Frontiers 2015

43. Delhanty PJ, van der Velde M, van der Eerden BC, Sun Y, Geminn JM, van der Lely AJ, Smith RG, van Leeuwen JP. (2014). Genetic manipulation of the ghrelin signaling system in male mice reveals bone compartment specificity of acylated and unacylated ghrelin in the regulation of bone remodeling. **Endocrinology** 155(11):4287-95.

44. Lin L[&], Lee JH[&], Bongmba OY, *Ma X*[#], Zhu X, Sheikh-Hamad D, Sun Y (2014). The suppression of ghrelin signaling mitigates age-associated thermogenic impairment. **Aging 6:1019-1032.** (The premier U.S. aging journal, IF 6.68) **(FCR 12)**

Invited by the editor to write an editorial on the subject for Oncotarget.

45. Yuxiang Sun (2015). Ghrelin controls obesity by burning fat. **Oncotarget** 6:6470-6471. (Impact factor 6.67)

46. T.D. Müller, R. Nogueiras, M.L. Andermann, Z.B. Andrews, S.D. Anker, J. Argente, R. Batterham, S.C. Benoit, C.Y. Bowers, F. Broglio, F.F. Casanueva, D. D'Alessio, I. Depoortere, A. Geliebter, E. Ghigo, P.A. Cole, M. Cowley, D.E. Cummings, A. Dagher, S. Diano, S.L. Dickson, C. Diéguez, R. Granata, H.J. Grill, K. Grove, K.M. Habegger, K. Heppner, M.L. Heiman, L. Holsen, B. Holst, A. Inui, J.O. Jansson, H. Kirchner, M. Korbonits,

B. Laferrère, C.W. LeRoux, M. Lopez, S. Morin, M. Nakazato, R. Nass, D. Perez-Tilve, P.T. Pfluger, T.W. Schwartz, R.J. Seeley, M. Sleeman, Y. Sun, L. Sussel, J. Tong, M.O. Thorner, A.J. van der Lely, L.H.T. van der Ploeg, J.M. Zigman, M. Kojima, K. Kangawa, R.G. Smith, T. Horvath, M.H. Tschöp (2015). Ghrelin. **Molecular Metabolism** 4:437-460. (A highly regarded new metabolic journal, IF 10.89) **(FCR 64)**

Most comprehensive review regarding all biological function aspects of ghrelin; 57 authors spent 2 years writing it.

47. Huang L, Lou Y, Ju H, Zhang L, Pan JS, Ross A, Sun Y, Truong LD, Sheikh-Hamad D (2015). Severe Nephrotoxic Nephritis Following Conditional and Kidney-Specific Knockdown of Stanniocalcin-1. **PLoS ONE** 10:e0138440.

The publications since joining TAMU:

48. Meadows A[&], Lee JH[&], Wu CS, Wei Q, Pradhan G[#]http://www.ncbi.nlm.nih.gov/pubmed/?term=Pradhan%20G%5BAuthor%5D&cauthor=true&cauthor_uid=26447738, Yafi M, Lu HC, Sun Y (2016). Deletion of G-protein coupled receptor 55 promotes obesity by reducing physical activity. **International Journal of Obesity (IJO)** 40:417-24 (Nature Press, IF 5.49) **(FCR 11)**

49. Lin L[&], Lee JH[&], Buras ED, Yu K, Wang R**,** Smith CW, Wu H, Sheikh-Hamad D, Sun Y (2016). Ghrelin receptor regulates adipose tissue inflammation in aging. **Aging** 8:178-191. (The premier U.S. aging journal, IF 6.68) **(FCR 14)**

Impact of the paper: Aging is associated with chronic inflammation; inflammation is a hallmark of aging. We found that old GHS-R null mice show a profile of reduced inflammation, due to macrophages shifting from pro-inflammatory M1 to anti-inflammatory M2. In this paper, we showed that GHS-R is expressed in macrophages, and this expression increases with aging. This study inspired a hypothesis that GHS-R is a key regulator of inflamm-aging, and that GHS-R metabolically programs macrophages during aging to exacerbate inflammation. This proposal is now funded by an NIH/NIA R01 grant.

According to the editorial office of **Aging**: This paper received a high supporting citation. "Of the 1,083,840 million papers that have been cited in our database in 2020, only 86,246 (8%) have received a supporting citation, so congrats on publishing reliable work!"

Featured in Texas A&M University AgriLife Today and other national news outlets.

50. Lee JH[&], Lin L[&], Xu P, Saito K, Wei Q, Meadows AG[&], Bongmba OY, Pradhan G[#], Zheng H, Xu Y, Sun Y. (2016). Neuronal deletion of ghrelin receptor almost completely prevents diet-induced obesity. **Diabetes** 65: 2169-2178. (The premier journal for diabetes, IF 10.89) **(FCR 10)**

Impact of the paper: This paper was the first-ever in the fields about tissue-specific GHS-R knockout mice, which provided an essential tool for studying the site(s) of action and pertinent mechanism(s) of GHS-R in neurons. It was remarkable to find that neural GHS-R deletion totally abolishes diet-induced obesity; this provided solid proof-of-concept support that targeting neural GHS-R may provide a powerful anti-obesity strategy. We have shared this novel model with a number of researchers, which led to a Co-I NIH/NIDDK R01 grant and several publications in various stages of preparation.

51. Wang RT, Li XS, Zhang JR, Sun Y, Yu KJ, Liu T. (2016). Bone mineral density is associated with left ventricular diastolic function in women. **Clin Cardiol.** 39: 709-714. PMID: 27716992

52. Li XS, Zhang JR, Zhao YL, Li Y, Sun Y, Liu T, Wang RT. (2017). Reduced prealbumin is associated with bone mineral density in women with osteoporosis. **Nutrition** 33:338-342. PMID: 27727007

53. Zhi-yuan Yun, Na Li, Xin Zhang, Huan Zhang, Yue Bu, Yuxiang Sun, Tiemin Liu, Rui-tao Wang, and Kai-jiang Yu (2017). Mean platelet volume, platelet distribution width and carcinoembryonic antigen to discriminate gastric cancer from gastric ulcer. **Oncotarget 8:62600-62505**. PMID: 28427217

54. Geetali Pradhan[#], Chia-Shan Wu, Jong Han Lee[&], Preeti Kanikarla, Shaodong Guo, Vijay K. Yechoor, Susan Samson and Yuxiang Sun (2017). Obestatin stimulates glucose-induced insulin secretion through ghrelin receptor GHS-R. **Scientific Reports**. 7: 979 (Impactor factor 6.43) (FCR 7.17)

Impact of the paper: Orexigenic hormone ghrelin and anorexic hormone obestatin are encoded by the same preproghrelin gene. While it is known that ghrelin inhibits glucose-stimulated insulin secretion (GSIS), the effect of obestatin on GSIS is unclear. Here we have investigated the effect of obestatin on GSIS *in vitro*, *in vivo* and *ex vivo*, and tested whether obestatin regulates insulin secretion through ghrelin receptor GHS-R. Our data demonstrate that obestatin is a potent insulin secretagogue under hyperglycemic condition, and obestatin's effect on insulin secretion is mediated by GHS-R in pancreatic β-cells. Our findings reveal an intriguing insight that obestatin and ghrelin have opposing effects on insulin secretion, and their effects in pancreatic islets are both mediated through GHS-R.

55. Chia-Shan Wu, Odelia Y. N. Bongmba[&], Jing Yue[&], Jong Han Lee[&], Ligen Lin[&], Kenji Saito, Geetali Pradhan[#], De-Pei Li , Hui-Lin Pan, Allison Xu, Shaodong Guo, Yong Xu , Yuxiang Sun. (2017). Suppression of GHS-R in AgRP Neurons Mitigates Diet-Induced Obesity by Activating Thermogenesis. ***Int. J. Mol. Sci.*** 18: 832.

Included in special issue of "Neurobiological Perspectives on Ghrelin"

56. Chen SR, Chen H, Zhou JJ, Pradhan G[#], Sun Y, Pan HL, Li DP. (2017). Ghrelin receptors mediate ghrelin-induced excitation of AgRP/NPY but not POMC neurons. **Journal of Neurochemistry** 142:512-520. (FCR 7.14)

57. Xiaojun Ma[#], Ligen Lin[&], Jing Yue[&], Chia-Shan Wu, Cathy A. Guo[# #], Rui-tao Wang, Kai-Jiang Yu, Sridevi Devaraj, Peter Murano, Zheng Chen, Yuxiang Sun (2017). Suppression of ghrelin exacerbates HFCS-induced adiposity and insulin resistance. **Int. J. Mol. Sci.** 18:1302. (IF 4.56)

Featured on special issue of "Gene-Diet Interactions in Chronic Diseases"

58. Qiong Wei, Jong Han Lee, Hongying Wang[#], Odelia Y. N. Bongmba, Chia-Shan Wu, Geetali Pradhan[#], Zilin Sun, Lindsey Chew, Mandeep Bajaj, Lawrence Chan, Robert S.

Chapkin, Miao-Hsueh Chen, Yuxiang Sun (2017). Adiponectin is required for maintaining normal body temperature in a cold environment. **BMC Physiology** 17:8. **(FCR 10)**

59. Na Li, Zhiwei Yu, Xin Zhang, Tiemin Liu, Yuxiang Sun, Rui-tao Wang & Kai-jiang Yu (2017). Elevated mean platelet volume predicts poor prognosis in colorectal cancer. **Scientific Reports 7**, 10261.

60. Kim SMoon, Neuendorff N, Alaniz R, Sun Y, Chapkin RS, Earnest D (2018). Shift Work Cycle-Induced Alterations of Circadian Rhythms Potentiate the Effects of High Fat Diet on Inflammation and Metabolism. **The FASEB Journal** 32:3085-3095 (IF 5.50).

61. Li D, Liu Q, Sun W, Chen X, Wang Y, Sun Y, Lin L (2018). 1,3,6,7-tetrahydroxy-8-prenylxanthone ameliorates inflammatory responses resulted in by the paracrine interaction of adipocytes and macrophages. **British Journal of Pharmacology** 175:1590-1606 (FCR 6)

62. Kumaravel MohanKumar, Jehoon Lee, Chia Shan Wu, Yuxiang Sun, and Stephen Safe (2018). Bis-Indole-Derived NR4A1 Ligands and Metformin Exhibit NR4A1-Dependent Glucose Metabolism and Uptake in C2C12 Cells. **Endocrinology** 159:1950-1963

63. Huan Zhang, Xin-hai Lv, Ning Gao, Na Li, Li Liu; Yuxiang Sun, Rui-tao Wang (2018). Preoperative platelet distribution width predicts breast cancer survival. **Oncotarget** 7:3456

64. Chuo Fang, Hyemee Kim, Giuliana Noratto, Yuxiang Sun, Stephen T. Talcott, Susanne U. Mertens-Talcott (2018). Gallotannin derivatives from mango (Mangifera indica L.) suppress adipogenesis and increase thermogenesis in 3T3-L1 adipocytes in part through the AMPK pathway. **Journal of Functional Foods** 46: 101–109.

The publications since Associate Professor promotion:

65. Qingtian Li, Fan Lei, Yi Tang, Jenny Szu-Chin Pan, Qiang Tong, Yuxiang Sun, and David Sheikh-Hamad (2018). Megalin mediates plasma membrane to mitochondria cross-talk and regulates mitochondrial metabolism. **Cellular and Molecular Life Sciences (CMLS)** 75:4021–4040 (IF 5.78).

66. Yuxiao Sun, Xiao Yao, Qing-Jun Zhang, Min Zhu, Zhi-Ping Liu, Bo Ci, Yang Xie, Deborah Carlson, Beverly A. Rothermel, Yuxiang Sun, Beth Levine, Joseph A. Hill, Steven E. Wolf, Joseph P. Minei, Qun S. Zang (2018). Beclin-1-Dependent Autophagy Protects the Heart During Sepsis. **Circulation** 138:2247–2262 (The most prestigious journal for cardiovascular research, IF26.69). **(FCR 59)**

67. Jingshu Chen, Lei Zhong, Jing Wu, Sui Ke, Benjamin Morpurgo, Andrei Golovko, Nengtai Ouyang, Yuxiang Sun, Shaodong Guo, Yanan Tian **(**2018). Murine Pancreatic Islet Cell-based Screening for Diabetogenic Environmental Chemicals. **Journal of Visualized Experiments (JoVE)** 136: e57327.

68. Jong Han Lee[&], Sahar Eshghjoo, Jon Davis, Robert C. Alaniz, and Yuxiang Sun (2018). New insights on neuronal functions of ghrelin receptor GHS-R in obesity. **Journal of Neurology & Neuromedicine** 3:69-74.

69. Wu Y, Pan Q, Yan H, Zhang K, Guo X, Xu Z, Yang W, Qi Y, Guo CA, Hornsby C, Zhang L, Zhou A, Li L, Chen Y, Zhang W, Sun Y, Zheng H, Wondisford F, He L, Guo S (2018). Novel Mechanism of Foxo1 Phosphorylation in Glucagon Signaling in Control of Glucose Homeostasis. **Diabetes** 67:2167-2182. (IF 7.72) **(FCR 12)**

70. Ligen Lin[&], Jong Han Lee[&], Ruitao Wang, Ru Wang, David Sheikh-Hamad, Qun S. Zang, and Yuxiang Sun (2018). *aP2*-Cre mediated ablation of GHS-R attenuates adiposity and improves insulin sensitivity during aging **Int. J. Mol. Sci.** *19*, 3002.

71. Yan H, Yang W, Zhou F, Li X, Pan Q, Shen Z, Han G, Newell-Fugate A, Tian Y, Majeti R, Liu W, Xu Y, Wu C, Allred K, Allred C, Sun Y, Guo S (2019). Estrogen Improves Insulin Sensitivity and Suppresses Gluconeogenesis via the Transcription Factor Foxo1. **Diabetes** 68: 291-304. (IF 7.72). **(FCR 23)**

72. Kebin Zhang, Xiaoqin Guo, Hui Yan, Yuxin Wu, Quan Pan, James Zheng Shen, Xiaopeng Li, Yunmei Chen, Ling Li, Yajuan Qi, Zihui Xu, Wei Xie, Weiping Zhang, David Threadgill, Ling He, Daniel Villarreal[#], Yuxiang Sun, Morris F. White, Hongting Zheng, Shaodong Guo (2019). Phosphorylation of forkhead protein FoxO1 at Ser253 regulates glucose homeostasis in mice. **Endocrinology** 160:1333-1347.

73. R.S. Siddanagouda, Wilmer H. Perera, Jose L. Perez, Giridhar Athrey, Yuxiang Sun, G.K. Jayaprakasha, Bhimanagouda S. Patil (2019). Cucurbitane-type compounds from *Momordica charantia*: Isolation, *in vitro* antidiabetic, anti-inflammatory activities and *in silico* modeling approaches. **Bioorganic Chemistry** 87:31-42.

74. Yang W, Yan H, Pan Q, Shen JZ, Zhou F, Wu C, Sun Y, Guo S. (2019) Glucagon regulates hepatic mitochondrial function and biogenesis through Foxo1. **J Endocrinol.** 241:265-278.

75. Thomas W Tilston, Richard D Brown, Matthew J Wateridge, Bradley Arms-Williams, Jamie J Walker, Yuxiang Sun and Timothy Wells (2019). A novel automated system yields reproducible temporal feeding patterns in laboratory rodents. **Journal of Nutrition** 149:1674-1684

76. Qiong Wei[&], Ling Li, Shaohua Wang, Yuxiang Sun, Zilin Sun (2019). Effects of exogenous ghrelin on muscle atrophy in elderly mice. **Chinese Journal of Geriatrics** 38(12), 1404-1407.

77. Shivanagoudra, Siddanagouda R., Wilmer H. Perera, Jose L. Perez, Giridhar Athrey, Yuxiang Sun, Chia S. Wu, G K. Jayaprakasha, and Bhimanagouda S. Patil (2019). In vitro and in silico elucidation of antidiabetic and anti-inflammatory activities of bioactive compounds from Momordica charant L. **Bioorganic & Medicinal Chemistry** 27:3097-3109.

78. Li Guo, Minglu Niu, Jie Yang, Li Li, Shuhan Liu, Yuxiang Sun, Zhishang Zhou and Yu Zhou (2019). GHS-R1a Deficiency Alleviates Depression-Related Behaviors After Chronic Social Defeat Stress. **Frontiers in Neuroscience** 13:364. (FCR 7.92)

79. Ratcliff M, Rees D, McGrady S, Buntwal L, Hornsby AKE, Bayliss J, KentBA, Bussey T, Saksida L, Beynon AL, Howell OW, Morgan AH, Sun Y, Andrews ZB, Wells T, Davies JS (2019). Calorie restriction activates new adult born olfactory-bulb neurons in a ghrelin-dependent manner but acyl-ghrelin does not enhance sub-ventricular zone neurogenesis. **Journal of Neuroendocrinology** 31:e12755.

80. Chia-Shan Wu, Odelia Y. N. Bongmba[&], Jong Han Lee[&], Ellie Tuchaai[##], Yu Zhou, De-Pei Li, Bingzhong Xue, Zheng Chen, Yuxiang Sun (2019). Ghrelin receptor in agouti-related peptide neurons regulate metabolic adaptation to calorie restriction. **Journal of Neuroendocrinology** 31:e12763.

Impact of the paper: This paper is part of an invited special issue of **Journal of Neuroendocrinology** featuring the neuroendocrine advances of the ghrelin system.

The ghrelin receptor GHS-R is highly expressed in the brain, with the highest expression in agouti-related peptide (AgRP) neurons in the hypothalamus. Evidences indicate that ghrelin serves as a survival hormone with respect to maintaining blood glucose and body weight during nutritional deficiencies, but the site of action is unknown. In this study, we generated a novel AgRP-specific GHS-R knockout mouse to investigate the role of GHS-R in hypothalamic AgRP neurons in metabolic and behavioral adaptation to hypocaloric restricted feeding, by subjecting the mice to 40% mild calorie restriction (CR). Our data suggest that GHS-R in AgRP neurons is a key component of the neurocircuitry involved in metabolic adaptation to calorie restriction.

81. Yingchang Lu, Minglu Niu, Xuan Qiu, Haisheng Cao, Benyuan Xing, Yuxiang Sun, Zhishang Zhou and Yu Zhou (2019). Acute But Not Chronic Calorie Restriction Defends against Stress-Related Anxiety and Despair in a GHS-R1a-Dependent Manner. **Neuroscience** 412: 94–104.

82. Qiong WEI; Ling LI; Shaohua WANG; Yuxiang SUN; Zilin SUN (2019). Effects of exogenous ghrelin on muscle atrophy in elderly mice. **Chinese Journal of Geriatrics** . *12: 1404-1407, 2019.*

83. Kazunari Nohara, Venkata Mallampalli, Travis Nemkov, Marvin Wirianto, Jiah Yang, Youqiong Ye, Yuxiang Sun, Leng Han, Karyn Esser, Eugenia Mileykovskaya, Angelo D'Alessandro, Carla Green, Joseph Takahashi, William Dowhan, Seung-Hee Yoo, and Zheng Chen (2019). Nobiletin fortifies mitochondrial respiration in skeletal muscle to promote healthy aging against metabolic challenge. **Nature Communications** 10, e3923 (A prestigious journal, IF 12.12) (**FCR 11**)

84. Daniel Villarreal[#], Geetali Pradhan[#], Chia-Shan Wu, Clinton S Allred, Shaodong Guo, Yuxiang Sun (2019). A Simple High Efficiency Protocol for Pancreatic Islet Isolation from Mice. **Journal of Visualized Experiments (JoVE)** 150: e57048.

Impact of the paper: Pancreatic islets are a crucial model system to study *ex vivo* insulin secretion. Acquiring high quality islets is of great importance for diabetes research. Most islet isolation procedures require technically difficult to access site of collagenase injection, harsh and complex digestion procedures, and multiple density gradient purification steps. In this paper, by leveraging years of our experiences, we featured a simple and high yield mouse islet isolation method with detailed descriptions and realistic demonstrations. This protocol produces approximately 250—350 islets per mouse and islets are suitable for various *ex vivo* studies. *Accounting to JoVE March 16, 2020 report: the paper has been reviewed 2393 times (2075 in last 6 months).*

85. Chia-Shan Wu, Qiong Wei, Hongying Wang[#], Da Mi Kim[#], Miriam Balderas, Guoyao Wu, John Lawler, Stephen Safe, Shaodong Guo, Sridevi Devaraj, Zheng Chen, Yuxiang Sun (2020). Protective effects of ghrelin on fasting-induced muscle atrophy in aging mice. **Journal of Gerontology** 75:621-630 (A premier journal for aging research, IF 5.80) (FCR 7.74)

Impact of the paper: Sarcopenia is the aging-associated progressive loss of skeletal muscle; however, the pathogenic mechanism of sarcopenia is not clear. The ghrelin stimulates growth hormone secretion, increases food intake, and promotes adiposity.
Here we showed that fasting-induced muscle loss was exacerbated in old ghrelin-null mice, and ghrelin treatment significantly increased mitochondrial function of muscle cells and myogenic genes of aging muscle. Our results showed that ghrelin has a major role in the maintenance of aging muscle, enhancing muscle anabolism and protecting against muscle atrophy. *This is this first in vivo study to disseminate ghrelin's effect in aging muscle, which provides a crucial evidence that ghrelin may represent an attractive therapeutic option for sarcopenia.*

86. Hong-ying Wang[#], Min Wu, Jun-ling Diao, Ji-bin Li, Yuxiang Sun and Xiao-qiu Xiao (2020). Huperzine A ameliorates obesity-related cognitive performance impairments involving neuronal insulin signaling pathway in mice. **Acta Parmacological Sinica** 44:145-153.

87. Yuxiang Sun (2020). A Cautionary Note for COVID-19 Survivors: Potential Long-term Risk for Alzheimer's Disease. **American Journal of Biomedical Science & Research** (AJBSR), 001415.

88. Amy K. Hauck, Tong Zhou, Ambuj Upadhyay, Yuxiang Sun, Michael B. O'Connor, Yue Chen, and David A. Bernlohr (2020). Histone carbonylation is a redox-regulated epigenomic mark that accumulates with obesity and aging. **Antioxidants** 9:1210.

89. Yuxiang Sun (2020). Thrifty hormone ghrelin: the secret of aging muscularly. **Journal of Aging Science** 8 (3):005.

90. Wang Liao, Wanbao Yang, Zheng Shen, Weiqi Ai, Quan Pan, Yuxiang Sun, and Shaodong Guo (2021). Heme Oxygenase-1 Regulates Ferrous Iron and Foxo1 in Control of Hepatic Gluconeogenesis. **Diabetes** 70: 696-709 (IF 7.72)

91. Sahar Eshghjoo, Arul Jayaraman, Yuxiang Sun *, Robert Alaniz * (2021). Microbiota regulation of atherosclerosis-associated immune response. **Molecules 26:179**. (*Corresponding authors)

Featured on Special issue of "*Nutraceuticals in Immune Function"*

92. Chia-Shan Wu, Sai Deepak Venkata Muthyala[##], Cory Klemashevich, Arinzechukwu Uchenna Ufondu, Rani Menon, Zheng Chen, Sridevi Devaraj, Arul Jayaraman, Yuxiang Sun (2021). Age-dependent remodeling of gut microbiome and host serum metabolome in mice. **Aging** 13:6330-6345 (A premier aging journal, IF 5.40)

Impact of the paper: The interplay between microbiota and host metabolism plays an important role in health. Here, we examined the relationship between age, gut microbiome and host serum metabolites in 3, 6, 18, and 28 months old male C57BL/6J mice. There is an age-dependent increases in Verrucomicrobia and Proteobacteria, and Verrucomicrobia is associated with increased susceptibility to colitis. Our correlation analyses of serum metabolites further showed that health metabolites tryptophan and indole significantly decreased with age. These results suggest a significant interplay between intestinal bacteria and host physiology, gut dysbiosis and microbial metabolites serve as good biomarkers for intestinal inflammation and leaky gut in aging.

93. Sahar Eshghjoo, Da Mi Kim[#], Arul Jayaraman, Yuxiang Sun[*], Robert C. Alaniz* (2021) A comprehensive high-efficiency protocol for isolation, culture, polarization, and glycolytic characterization of bone marrow-derived macrophages. **Journal of Visualized Experiments (JoVE)**. 168: e61959 (* Corresponding authors)

94. Wilmer H. Perera, Siddanagouda R. Shivanagoudra, Jose L. Pérez, Da Mi Kim[#], Yuxiang Sun, Guddadarangavvanahally K. Jayaprakasha, Bhimanagouda S. Patil (2021). Anti-inflammatory, antidiabetic properties and in silico modeling of cucurbitane-type triterpene glycosides from fruits of Indian cultivar of Momordica charantia L. **Molecules** 26:1038.

94. Ashley Calder, Tian Yu, Naima Dahir, Yuxiang Sun, and Timothy A (2021). Ghrelin Receptors Enhance Fat Taste Responsiveness in Female Mice. **Nutrients** 13:1045.

96. Jong Han Lee[&], Ligen Lin[&], Xiangcang Ye, Christian Wolfrum, Yingjie Chen, Shaodong Guo, Yuxiang Sun (2021). GHS-R in brown fat potentiates differential thermogenic responses under metabolic and thermal stresses. **PLoS One** 16:e0249420.

97. Jong Han Lee[&], Chuo Fang, Xin Li, Chia Shan Wu, Ji Yeon Noh [#], Xiangcang Ye, Robert S. Chapkin, Kai Sun, Yuxiang Sun (2021). GHS-R suppression in adipose tissues protects against obesity and insulin resistance by regulating adipose angiogenesis and fibrosis. **International Journal of Obesity (IJO)** 45:1565-1575 (A highly regarded traditional journal in obesity, IF 5.34).

Impact of the paper: Ghrelin/GHS-R signaling has important roles in regulation of energy homeostasis, and global deletion of GHS-R reduces obesity and improves insulin sensitivity by increasing thermogenesis. However, it is unknown whether GHS-R regulates thermogenic activation in adipose tissues directly. We generated a novel adipose tissue-specific GHS-R

deletion mouse model and characterized the mice under regular diet and high-fat diet feeding. Our results show that GHS-R has cell-autonomous effects in adipocytes, and suppression of GHS-R in adipose tissues protects against diet-induced obesity and insulin resistance by modulating adipose angiogenesis and fibrosis. These findings suggest adipose GHS-R may constitute a novel therapeutic target for treatment of obesity and metabolic syndrome.

98. Geetali Pradhan[#], Chia-Shan Wu, Daniel Villarreal[#], Jong Han Lee[&], Hye Won Han[#], Akhilesh Gaharwar, Yanan Tian, Wenxian Fu, Shaodong Guo, Roy G Smith and Yuxiang Sun (2021). β cell GHS-R regulates insulin secretion and sensitivity. **Int. J. Mol. Sci.** 22:3950 (IF 6.208)

Impact of the paper: GHS-R is widely known to regulate food intake and adiposity, but its role in glucose homeostasis is unclear. In this study, we investigated the expression of GHS-R in mouse pancreatic islets and its role in glycemic regulation. We used Ghsr-IRES-tauGFP mice to demonstrate the GHS-R co-localization with β and α cells. We also generated a novel β-cell-specific GHSR knockout mice to investigate that cell-specific role of GHS-R in β-cells. Our study underscores that GHS-R is an important regulator of glucose homeostasis, and GHS-R antagonists may have therapeutic potential for Diabetes.

99. Xiaoqin Guo, Xiaopeng Li, Wanbao Yang, Wang Liao, James Zheng Shen, Weiqi Ai, Quan Pan, Yuxiang Sun, Kebin Zhang, Rui Zhang, Yuyang Qiu, Qian Dai, Hongting Zheng, Shaodong Guo (2021). Metformin Targets Foxo1 to Control Glucose Homeostasis. **Biomolecules**, 11, 873.

Special issue on "Molecular Mechanisms of Obesity, Diabetes, Inflammation and Aging".

100. Q Wei[&], JH Lee[&], CS Wu, QS Zang, S Guo, HC Lu, Y Sun (2021). Metabolic and inflammatory functions of cannabinoid receptor type 1 are differentially modulated by adiponectin. **World Journal of Diabetes** 12:1750-1764.

101. Jose L Perez, Siddanagouda R Shivanagoudra, Wilmer H Perera, Da Mi Kim, Chia S Wu, Yuxiang Sun, GK Jayaprakasha, Bhimanagouda S Patil (2021). Bitter melon extracts and cucurbitane-type triterpenoid glycosides antagonize lipopolysaccharide-induced inflammation via suppression of NLRP3 inflammasome. **Journal of Functional Foods** 86:104720.

102. Min Wu, Maolin Liao, Rongfeng Huang, Chunxiu Chen, Tian Tian, Hongying Wang[#], Jiayu Li, Jibin Li, Yuxiang Sun, Chaodong Wu, Qifu Li, Xiaoqiu Xiao (2022). Hippocampal overexpression of TREM2 ameliorates high fat diet induced cognitive impairment and modulates phenotypic polarization of the microglia. **Genes & Diseases** 9:401-414.

103. Nan Li, Kewei Xiao, Xue Mi, Na Li, Li Guo, Xiaorong Wang, Yuxiang Sun, Guo-Dong Li, Yu Zhou (2022). Ghrelin signaling in dCA1 suppresses neuronal excitability and impairs memory acquisition via PI3K/Akt/GSK-3β cascades. **Neuropharmacology** (IF5.25)

104. Qiang Tong, Ke Yun Chen, Alejandra De Angulo, Xin Guo, Aditya More, Scott A Ochsner, Eduardo Lopez, David Saul, Weijun Pang, Yuxiang Sun, Neil J McKenna (2022).

Adipocyte-Specific Ablation Of PU.1 Promotes Energy Expenditure and Ameliorates Metabolic Syndrome In Aging Mice. **Frontiers in Aging,** section of Aging, Metabolism and Redox Biology (IF5.702)

105. Satyam Rajput, Kaivalya A. Deo, Tanmay Mathur, Giriraj Lokhande, Kanwar Abhay Singh, Yuxiang Sun, Daniel L. Alge, Abhishek Jain, Tapasree Roy Sarkar, Akhilesh K. Gaharwar (2022). 2D Nanosilicate for Additive Manufacturing: Rheological Modifier, Sacrificial Ink and Support Bath. **Journal Bioprinting**, e00187.

106. Jong Han Lee[&], Bingzhong Xue, Zheng Chen, Yuxiang Sun (2022). Neuronal GHS-R differentially modulates feeding patterns under normal and obesogenic conditions. **Biomolecules** 12, 293 (IF 4.879)
Special issue "*Molecular Mechanisms of Obesity, Diabetes, Inflammation and Aging*"

107. Ji Yeon Noh[#], Chia-Shan Wu, Jennifer A. A. DeLuca, Sridevi Devaraj, Arul Jayaraman, Robert C. Alaniz, Xiao-Di Tan, Clinton D. Allred and Yuxiang Sun (2022). Novel Role of Ghrelin Receptor in Gut Dysbiosis and Experimental Colitis in Aging. **Int. J. Mol. Sci.** 23, 2219 (IF 6.208)
Featured on special issue of "*Immunopathology and Immunosenescence*"

108. Geetali Pradhan[#], Jong Han Lee[&], Chia-Shan Wu, Hongying Wang[&], Ligen Lin[&], Taraka Donti, Brett H Graham, Arun S. Rajan, Ashok Balasubramanyam, Susan Samson, Shaodong Guo, and Yuxiang Sun (2022). Mechanistic investigation of GHS-R mediated glucose-stimulated insulin secretion in pancreatic islets. **Biomolecules** 12, 407 (IF 4.879)
Special issue *"Molecular Mechanisms of Obesity, Diabetes, Inflammation and Aging"*

109. Anuhya S. Kotta, Abigail S. Kelling, Karen A. Corleto, Yuxiang Sun and Erin D. Giles (2022). Ghrelin and Cancer: Examining the Roles of the Ghrelin Axis in Tumor Growth and Progression. **Biomolecules** 12, 483

110. Daniel Villarreal[#], Geetali Pradhan[#], Yu Zhou[3], Bingzhong Xue, Yuxiang Sun (2022). Diverse and complementary effects of ghrelin and obestatin. **Biomolecules** 12, 517

111. Hui Yan, Wanbao Yang, Fenghua Zhou, Quan Pan, Kimberly Allred, Clinton Allred, Yuxiang Sun, David Threadgill, David Dostal, Carl Tong, and Shaodong Guo (2022). Estrogen protects cardiac function and energy metabolism in dilated cardiomyopathy induced by loss of cardiac IRS1 and IRS2. **Circulation: Heart Failure** (IF39.918)

112. Sahar Eshghjoo, Da Mi Kim[#], Arul Jayaraman, Yuxiang Sun*, and Robert C. Alaniz*(2022). Macrophage Polarization in Atherosclerosis. **GENES** 13, 756. (*Corresponding authors)

113: Na Li , Nan Li , Liu Yang , Huating Gu , Junjie Ji , Hao Zhou , Qianqian Zhu , Ming Yu , Yuxiang Sun, Yu Zhou- (2022). GHSR1a deficiency suppresses inhibitory drive on

dCA1 pyramidal neurons and contributes to memory reinforcement. **Cerebral Cortex** (IF 5.357)

114. Yuxiang Sun*, Xiangcang Ye, Hilda Kennedy, Alexander G. A. Smith, Roy G. Smith (2022). Binding Domain Characterization of Growth Hormone Secretagogue Receptor. **Journal of Translational Internal Medicine** (*Corresponding author)

115. Ellie Tuchaai[##], Valerie Endres, Brock Jones, Smriti Shankar, Cory Klemashevich, Yuxiang Sun* and Chia-Shan Wu* (2022) Deletion of ghrelin alters tryptophan metabolism and exacerbates experimental ulcerative colitis in aged mice. **Experimental Biology and Medicine** 247:1558-15569 (*Corresponding authors)

116. Rachel M. Kratofil, Hanjoo B. Shim, Raymond Shim, Woo Yong Lee, Elodie Labit, Sarthak Sinha, Catherine M. Keenan, Bas G.J. Surewaard, Ji Yeon Noh[#], Yuxiang Sun, Keith A. Sharkey, Matthias Mack, Jeff Biernaskie, Justin F. Deniset, and Paul Kubes (2022). A monocyte-leptin-angiogenesis pathway critical for repair post-infection. **Nature 609:166-173** (IF49.962)

Impact of the paper: This is the first publication demonstrating that monocytes function as a cellular rheostat in revascularization during wound repair, ghrelin and leptin have antagonistic effects for this novel monocyte function. Our data of immune cell analysis in ghrelin knockout was critical for this publication.

117. Jingshu Chen, Shu Tang, Sui Ke, James J. Cai, Daniel Osorio, Andrei Golovko, Benjamin Morpurgo, Shaodong Guo, Yuxiang Sun, Melanie Winkle, George A. Calin, Yanan Tian (2022). Ablation of long noncoding RNA MALAT1 activates antioxidant pathway and alleviates sepsis in mice. **Redox Biology**

118. Colleen O'Reilly, Ligen Lin[&], Hongying Wang[&], James Fluckey and Yuxiang Sun (2022). Ablation of Ghrelin Receptor Mitigates the Metabolic Decline of Aging Skeletal Muscle. **GENES, 13,1368**

119. Ji Yeon Noh[#], Matthew Herrera, Bhimanagouda S. Patil, Xiao-Di Tan, Gus A. Wright and Yuxiang Sun (2022). The expression and function of growth hormone secretagogue receptor in immune cells: a current perspective. **Experimental Biology and Medicine** 247:2184-2191.

Invited for "Thematic issue: Women Leaders in Science"

120. Tingyuan Yang, Shuli Tang, Syuan-Ting Kuo, Dallas Freitas, Madison Edwards, Hongying Wang, Yuxiang Sun, Xin Yan (2022). "Lipid Mass Tags via Aziridination for Probing Unsaturated Lipid Isomers and Accurate Relative Quantification" **Angewandte Chemie**

121. Kristie Conde, Danielle Kulyk, Allison Vanschaik, Sierra Daisey, Catherine Rojas, Kimberly Weirsielis, Ali Yasrebi, Thomas J Degroat, Yuxiang Sun, Troy Adam Roepke

(2022). Deletion of growth hormone secretagogue receptor in kisspeptin neurons in female mice blocks diet-induced obesity. **Biomolecules** 12(10), 1370.

122. Umesh Bhattarai, Xiaochen He, Rui Xu, Xiaoguang Liu, Lihong Pan, Yuxiang Sun, Jian Xiong Chen, Yingjie Chen (2-23). IL12α deficiency attenuates pressure overload-induced cardiac inflammation, hypertrophy, dysfunction, and heart failure progression
Journal: Frontiers in Immunology, section Inflammation

b. Published without peer review

1. Smith RG and Sun Y (2006). Ghrelin does not regulate feeding or fat deposition in leptin-deficient mice, but regulates glucose homeostasis. **Journal of Neurochemistry** 98 (Suppl. 1):53.

2. Alukal J, Louet, M, Whirledge S, Louet M, Sun Y, Smith RG, Lamb D (2008). Ghrelin and leptin in prevention of testicular damage due to cryptorchidism. Ghrelin and leptin influence differential gene expression in the post-pubertal murine sertoli cell. **Fertility and Sterility** 90, s63-343.

3. Vishwa Deep Dixit, Yun-Hee Youm, Jong-Seop Rim, Yuxiang Sun, Roy Smith, Steven Smith, Chiaki Nakata (2008). Inhibition of Ectopic Adipocyte Accretion within Aging Thymic Environment Stimulates Thymopoiesis. The FASEB Journal - Immunology (March 1, 2008). https://doi.org/10.1096/fasebj.22.1_supplement.845.7

4. B. C. Van Der Eerden, M. van der Velde, Y. Sun, P. J. Delhanty, A.-J. van der Lely, R. G. Smith, (2009). Opposing effects of nutrition hormones ghrelin and leptin in osteoblastogenesis. **Bone**, **44**(2), DOI:10.1016/j.bone.2009.03.118.

5. Alukal J, Whirledge S, Louet M, Sun Y, Smith RG, Lamb D (2009). Ghrelin and leptin in prevention of testicular damage due to cryptorchidism. **The Journal of Urology** 181 (4):683.

6. B. C. Van Der Eerden, M. van der Velde, Y. Sun, P. J. Delhanty, J. M. Almering, A.-J. van der Lely, R. G. Smith, J. P. van Leeuwen (2011). Deletion of Ghrl, But Not Ghsr Increases Bone Turnover In Male Mice Implicating Specific Effects For Acylated And Unacylated Ghrelin. **Bone**, 48, s127-s128.

7. B. C. Van Der Eerden, M. van der Velde, Y. Sun, P. J. Delhanty, J. M. Almering, A.-J. van der Lely, R. G. Smith, J. P. van Leeuwen (2011). Aging unmasks ghrelin's bone-protective effects through shifting from systemic stimulation to local inhibition of osteoclastogenesis. **Bone**, **48**(2), DOI:10.1016/j.bone.2011.03.247.

8. Yuxiang Sun (2013). The ghrelin receptor regulates obesity by modulating heat production. **Journal of obesity & weight loss therapy** 4 (5):81.

9. Yuxiang Sun (2014). Ghrelin receptor mediates HFCS-induced adipose inflammation and insulin resistance. **Journal of obesity & weight loss therapy** 3 (7):47.

10. Wu, C-S, Noh, J. Y. [#], Tuchaai, E. [# #], Devaraj, S., Chen, Z., Sun Y (2019). Aging gut microbiome profile and ghrelin signaling in microbiome homeostasis. **The FASEB Journal** 33 (Issue S1), 794.17.

11. CS Wu, J Noh [#], E Tuchaai [# #], JA DeLuca, KF Allred, CD Allred, Y Sun (2019). Suppression of ghrelin signaling exacerbates ulcerative colitis in older mice. **Innovation in Aging** 3 (Supplement 1), S87-S87.

12. Chia-Shan Wu, Pengfei Ji [#], Yan Liu, Yuxiang Sun (2020). Neuronal Deletion of Ghrelin Receptor Attenuates Aging-Associated Insulin Resistance and Cognitive Decline. **The FASEB Journal** 34 (Issue S1), 03998.

13. Guoyao Wu, Fuller W. Bazer, M. Carey Satterfield, Kyler R. Gilbreath, Erin A. Posey & Yuxiang Sun (2021). L-Arginine Nutrition and Metabolism in Ruminant**s. Recent Advances in Animal Nutrition and Metabolism** pp 177-206.

4.2.2 Book chapters:

1. Smith RG, Betancourt L and Sun Y. "Role of the Growth Hormone Secretagogue Receptor in the Central Nervous System", published as a book chapter in "**Brain Somatic Cross-Talk and the Central Control of Metabolism**" by Foundation IPSEN, Paris, January 28, 2002.
2. Smith RG, Sun Y, Bailey ART and Paschali A. "Ghrelin: Central Actions and Potential Implications in Neuro-degenerative Diseases", published as a book chapter in **"GHRELIN"** edited by Ezio Ghigo and published by Kluwer Academic Publisher (June 2004).
3. Chuo Fang, Hang Xu, Shaodong Guo, Susanne M. Talcott and Yuxiang Sun. "Ghrelin signaling in immunometabolism and inflamm-aging", published as a book chapter in "Central Circadian Clock Regulates Energy Metabolism" by Springer Nature, August 2018. **Adv Exp Med Biol**. 2018;1090:165-182. PMID: 30390290
4. Guoyao Wu, Fuller W. Bazer, M. Carey Satterfield, Kyler R. Gilbreath, Erin A. Posey & Yuxiang Sun (2022). L-Arginine Nutrition and Metabolism in Ruminant**s. Advances in Experimental Medicine and Biology,** book series (AEMB,volume 1354, Published on 01 Jan 2022).

4.2.3 Abstracts:

[#]***Graduate students (under my direct supervision) contribute to the work***

[# #] ***Undergraduate students (under my direct supervision) contribute to the work***

1. Sun Y, Robertson MC, Cosby H, Fresnoza A and Duckworth ML. **The effects of**

transforming growth factor α on the expression of rat placental lactogens I and II. 77th Annual Meeting of Endocrine Society, June 14-17, 1995. Washington, D.C. U.S.A.

2. Sun Y, Fresnoza A and Duckworth ML. **The identification of a placental specific enhancer in the rat placental lactogen II gene**. 79th Annual Meeting of the Endocrine Society, June 11-14, 1997. Minneapolis, Minnesota, U.S.A

3. Sun Y, Fresnoza A and Duckworth ML. **The role of transcription factor Ets2 in rat placental lactogen gene regulation**. 42nd Annual Meeting of Canadian Federation of Biological Science Society, June 2-5, 1999. University of Manitoba, Winnipeg, Manitoba, Canada.

4. Sun Y, Fresnoza A and Duckworth ML. **The role of Ets transcription factors in rat placental lactogen II gene regulation**. 81st Annual Meeting of the Endocrine Society, June 12-15, 1999. San Diego, CA. (*Awarded travel grant*)

5. Duckworth ML, Fresnoza A and Sun Y. **Transgenic studies on the role of rat placental lactogen II enhancer in placental-specific expression**. 82nd Annual Meeting of the Endocrine Society, June 21-24, 2000. Toronto, Ontario, Canada.

6. Smith RG, Sun Y, Xu Y, Smith AGA, Howard A, Feighner S, Dean D, Nargund R and Patchett A. **Agonists of the growth hormone secretagogue receptor (GHS-R) and their rejuvenating effects**. Golden Research Conferences Biology of Aging, July 22-27, 2001, Queens College, Oxford, England.

7. Sun Y, Xu Y, Smith AGA, Howard A, Feighner S, Pong SS, Dean D, Van der Ploeg LTH, Nargund R and Patchett A, Smith RG. **Ghrelin, adenosine and synthetic ligands for the Growth Hormone Secretagogue Receptor (GHS-R) occupy different binding pockets**. 83rd Annual Meeting of the Endocrine Society, June 20-23, 2001. Denver, CO.

8. Sun Y, Ahmed S and Smith RG. **Generation and Characterization of Ghrelin Knockout Mice**. 84th Annual Meeting of the Endocrine Society, June 19-22, 2002. San Francisco, CA.

9. Smith RG, Sun Y, Paylor R, and Paschali A. **GH Secretagogues and Neurodegenerative Diseases**. 4th International Symposium on Growth Hormone Secretagogues, November 7-10, 2002. Clearwater, FL.

10. Sun Y, Wang P, Zheng H and Smith RG. **Generation and characterization of Growth Hormone Secretagogue Receptor knockout mice**. 4th International Symposium on Growth Hormone Secretagogues, November 7-10, 2002. Clearwater, FL (*Oral presentation*)

11. Asnicar MA, Sun Y, Smyth RG. **Ghrelin Deficiency Does Not Protect Against Diet Induced Obesity in Mice**. 85th Annual Meeting of the Endocrine Society, June 19-22, 2003. Philadelphia, PA.

12. Sun Y, Wang P, Zheng H and Smith RG. **Generation and Characterization of Growth Hormone Secretagogue Receptor Knockout Mice**. 85th Annual Meeting of the Endocrine Society, June 19-22, 2003. Philadelphia, PA. (*Awarded travel grant*)

13. Sun Y, Asnicar MA, Taffet G and Smith, RG. **Phenotype of Ghrelin Receptor Knockout Mice.** 86th Annual Meeting of the Endocrine Society, June 16-19, 2004. New Orleans, Louisiana.

14. Sun Y, Hicks LM and Smith RG. **Characterization of ghrelin and leptin double knockout mice - ghrelin's role in glucose homeostasis**. 87th annual meeting of Endocrine Society, June 4-7, 2005. San Diego, CA. (*Awarded travel grant, Oral presentation*)

15. van der Velde M, van der Eerden BCJ, Delhanty PJ, Sun Y, Smith RG, van der Lely AJ, Pols HAP and van Leeuwen JPTM. **Deletion of ghrelin, but not its receptor GHSR leads to trabecular bone changes in ageing male mice**. The 33rd European Symposium on Calcified Tissues, Prague, May 2006.

16. Szentirmai E, Sun Y, Smith RG, Krueger, JM. **Spontaneous and sleep deprivation-induced sleep in ghrelin knockout mice**. Neuroscience 36th annual meeting, Oct. 14-18 2006. Atlanta, GA.

17. Sun Y, Asnicar M, Saha PK, Chan L and Smith RG. **Ablation of the Ghrelin and Ghrelin Receptor Prevents Age-Dependent Insulin Resistance**. The 89th Annual Meeting of the Endocrine Society, June 2-5, 2007. Toronto, ON, Canada (*Awarded travel grant, Oral presentation*)

18. Szentirmai E, Kapás L, Sun Y, Smith RG, Krueger JM. **Sleep responses to ghrelin, leptin and cholecystokinin in ghrelin knockout mice**. The 21st Annual Meeting of the Associated Professional Sleep Societies (APSS). June 9-14, 2007. Minneapolis, MN.

19. Sun Y, Saha PK, Smith AGA, Chan L and Smith RG. **Ablation of the Ghrelin Receptor Prevents Age-associated Insulin Resistance**. Keystone Symposia on Diabetes, Insulin Action and Resistance. January 22-27, 2008. Beaver Run Resort, Breckenridge, CO.

20. Sun Y, Saha PK, Smith AGA, Chan L and Smith RG. **Ablation of the Ghrelin Receptor Prevents Age-associated Insulin Resistance**. American Diabetes Association 68th Scientific Sessions. June 6-10, 2008. San Francisco, CA.

21. Delhanty P, Sun Y, van Kerkwijk A, Visser J, Smith RG, Themmen A and van der Lely AJ. **Unacylated ghrelin modulates the expression of genes involved in glucose and lipid metabolism in mice that lack GHS-R**. The 90th Annual Meeting of the Endocrine Society, June 15-18, 2008, 2008. San Francisco, CA.

22. Smith RG, Jiang H, Zhang H, and Sun Y. **Lessons from Ghrelin and Ghrelin Receptor (Ghsr1a) Knockout Mice**. European Neuroendocrine Association, October 7-20, 2008. Antalya, Turkey.

23. Sun Y, Saha PK, Osifeso I, Shao L, Smith AGA, Chan L and Smith RG. **The role of Ghrelin Receptor in Age-associated Insulin Resistance**. The 12th International Symposium of Society of Chinese Bioscientists in America. June 15-18, 2009, Taipei, Taiwan

24. Sun Y, Saha PK, Osifeso I, Shao L, Smith AGA, McGuinness OP, Chan L and Smith RG. **Ghrelin Receptor Deletion Reduces Visceral Fat and Prevents Age-Associated Insulin Resistance**. Keystone Symposia on Adipose Tissue biology and Neuronal control of Appetite, Metabolism and Weight. January 24-29, 2010. Keystone, CO.

25. Rogers NH, Van der Brug MP, Cookson MR, Sun Y, Smith RG. **Hepatic changes in metabolic gene expression in old ghrelin and ghrelin receptor knockout mice**. 92nd Annual Meeting of Endocrine Society, June 19-22, 2010. San Diego, CA.

26. Lin L, Saha PK, Osifeso I, Shao L, Smith AGA, McGuinness OP, Chan L and Smith RG, Sun Y. **Ablation of the Ghrelin Receptor Prevents Age-Dependent Insulin Resistance**. The American Aging Association's 39th Annual Meeting, June 4-7, 2010. Portland, Oregon. (*Awarded travel grant*)

27. Lin Y, Osifeso I, *Ma X*#, McGuinness O, Smith RG, Sun Y. **Ablation of Ghrelin Receptor in Leptin-Deficient Mice Has Paradoxical Effects on Glucose Homeostasis Compared to Ghrelin-ablated Leptin-Deficient Mice**. 92nd Annual Meeting of the Endocrine Society, June 19-22, 2010. San Diego, CA.
(*Awarded travel grant*)

28. Sun Y, Saha PK, Osifeso I, Shao L, Smith AGA, McGuinness OP, Chan L, Smith RG. **Ghrelin Receptor Null Mice Have Reduced Visceral Fat and Improved Insulin Sensitivity during Aging**. 92nd annual meeting of Endocrine Society, June 19-22, 2010. San Diego, CA. *(Awarded travel grant)*

29. *Ma X*#, Lin L, Qin G, Fiorotto M, Dixit VD, Sun Y. **Ablations of ghrelin and ghrelin receptor exhibit differential metabolic phenotype and differential thermogenic gene expression in brown adipose tissue**. 50th Annual Meeting of American Society for Cell Biology, Dec. 11-15, 2010. Philadelphia, PA. (*Abstract was selected as one of the 10 "Novel & Newsworthy Top Picks" from among 1100 abstract submissions, published on "Pressbook" of the annual meeting and as NEWS highlights on a number of science websites*)

30. Lin L, Saha PK, *Ma X*#, Shao L, Chan L, McGuinness OP, Smith RG, and Sun Y*. **Ablation of Ghrelin Receptor Improves Insulin Sensitivity during Aging by Regulating Fat Metabolism and Thermogenesis**. Keystone Symposia on Type 2 Diabetes, Insulin Resistance and Metabolic Dysfunction. Jan. 12 - 17, 2011, Keystone Resort, Keystone, CO (*Awarded travel scholarship*).

31. B. C. Van Der Eerden, M. van der Velde, Y. Sun, P. J. Delhanty, J. M. Almering, A.-J. van der Lely, R. G. Smith, J. P. van Leeuwen. **Deletion of Ghrl, But Not Ghsr Increases Bone**

Turnover In Male Mice Implicating Specific Effects For Acylated And Unacylated Ghrelin. 3rd Joint Meeting of ECTS & IBMS. Athens, Greece. May 7-11, 2011.

32. M. van der Velde, B. C. van der Eerden, Y. Sun, P. J. Delhanty, J. M. Almering, A.-J. van der Lely, R. G. Smith, J. P. van Leeuwen. **Deletion of Ghrl, but Not Ghsr Increases Bone Turnover In Male Mice Implicating Specific Effects For Acylated And Unacylated Ghrelin**. 3rd Joint Meeting of ECTS & IBMS. Athens, Greece. May 7-11, 2011.

33. Ligen Lin, Pradip K. Saha, *Xiaojun Ma* #, Qiang Tong, Lawrence Chan, and Yuxiang Sun. **Ablation of Ghrelin Receptor Reduces Adiposity and Improves Insulin Sensitivity during Aging by Regulating Fat Metabolism and Thermogenesis**. 2nd Annual Roy M. Huffington Distinguished Lecture and Symposium, Huffington Center on Aging, Baylor College of Medicine, May 4th, 2011.

34. Ligen Lin, Huaizhu Wu, *Xiaojun Ma* #, Eric D. Buras, C. Wayne Smith, Yuxiang Sun*. **The role of ghrelin receptor in adipose tissue macrophage infiltration and insulin resistance**. 2nd Annual Roy M. Huffington Distinguished Lecture and Symposium, Huffington Center on Aging, Baylor College of Medicine, May 4th, 2011. (*Awarded poster award*)

35. *Xiaojun Ma* #, Ligen Lin, Yuxiang Sun. **Ablation of Ghrelin Receptor Reduces Adipose Inflammation during Aging**. 2nd Annual Roy M. Huffington Distinguished Lecture and symposium, Huffington Center on Aging, Baylor College of Medicine, May 4th, 2011.

36. Ligen Lin, *Xiaojun Ma*# and Yuxiang Sun. **Ghrelin receptor regulates meal patterns during aging**. 94th Annual Meeting of Endocrine Society, June 23-26, 2012. Houston, TX.

37. Jing Yue, *Xiaojun Ma* #, Ligen Lin, Huaizhu Wu, C. Wayne Smith, and Yuxiang Sun. **Ablation of ghrelin receptor attenuates high fructose corn syrup (HFCS)-induced adipose inflammation and insulin resistance**. 94th Annual Meeting of Endocrine Society, June 23-26, 2012. Houston, TX. (*Awarded Outstanding Abstract Award and selected for oral presentation and inclusion in the news release of the Endo meeting and the Annual Research Summaries Book (RSB) of the Endocrine Society.*)

38. *Xiaojun Ma* #, Ligen Lin, Jing Yue, Huaizhu Wu, David Sheikh-Hamad, C. Wayne Smith, Yuxiang Sun. **Ablation of ghrelin receptor attenuates high fructose corn syrup (HFCS)-induced adipose inflammation and insulin resistance**. Keystone Symposia, Jan. 27 – Feb. 1, 2013. Keystone, Colorado.

39. Yuxiang Sun. **Ghrelin signaling has unique properties in regulating obesity during aging independent from diet or exercise**. The 4th World Gene Convention-2013, November 13-16, 2013. Hainan, China (*Oral presentation*)

40. Yuxiang Sun. **The ghrelin receptor regulates obesity by modulating heat production**. The 2nd International Conference and Exhibition on Obesity & Weight Management. Dec. 2-4. 2013. Las Vegas, NE (*Oral presentation*)

41. Alvaro Munoz, Timothy B. Boone, and Yuxiang Sun. Ghrelin-signaling affects neurally evoked bladder contractions but not detrusor performance. Society for Urodynamics and Female Urology Meeting, February 26–March 2, 2013. Las Vegas, Nevada

42. *Xiaojun Ma*[#], Ligen Lin, Geetali Pradhan[#], Huaizhu Wu, C. Wayne Smith, Yuxiang Sun. **Ablation of ghrelin receptor attenuates high fructose corn syrup (HFCS)-induced adipose inflammation and insulin resistance**. The Texas Medical Center Digestive Diseases Center (DDC) 5th Annual Frontiers in Digestive Diseases: The Gut Microbiome in Health & Disease. Feb 8, 2014. Houston, TX

43. Thomas W Tilston, Richard C Brown, Anna L Hopkins, Bradley Arms-Williams, Yuxiang Sun, Timothy Wells. **The weight gain and weight loss effects of grazing and meal feeding are mediated by ghrelin**. 96th Annual Meeting of Endocrine Society, June 21-24, 2014. Chicago, Illinois.

44. Geetali Pradhan[#] and Yuxiang Sun **Obestatin stimulates insulin secretion under glucose-stimulated condition.** American Diabetes Association 68th Scientific Sessions. June 13-17, 2014. San Francisco, CA.

45. Tilston TW, Brown RC, Hopkins AL, Wells LH, Arms-Williams B, Sun Y, Wells T. **Feeding patterns regulate metabolic outcome by modifying ghrelin profiles**. Experimental Physiology and Physiological Society Meeting on Obesity: a Physiological Perspective, 2014. Newcastle, UK.

46. Ligen Lin, Jong Han Lee, Odelia Y. N. Bongmba, David Sheikh-Hamad, and Yuxiang Sun. **The suppression of ghrelin signaling mitigates age-associated thermogenic impairment.** 97th Annual Meeting of the Endocrine Society. March 5 - 8, 2015. San Diego, CA.

47. Geetali Pradhan[#], Jong Han Lee, Yuxiang Sun. **The role of ghrelin receptor in regulation of glucose homeostasis.** 97th Annual Meeting of the Endocrine Society. March 5 - 8, 2015. San Diego, CA. (*Oral presentation*)

48. Geetali Pradhan[#] and Yuxiang Sun. **Insulinotropic effect of obestatin is mediated through ghrelin receptor**. American Diabetes Association 75th Scientific Sessions, June 5-9, 2015 in Boston, Massachusetts. (*Selected to be showcased in a Guided Audio Poster Tour of "Stimulus-Secretion Coupling").*

49. Jong Han Lee, Ligen Lin, Pingwen Xu, Kenji Saito, Qiong Wei, Adelina G. Meadows, Odelia Y. N. Bongmba, Geetali Pradhan[#], Hui Zheng, Yong Xu, and Yuxiang Sun. **Neuronal deletion of ghrelin receptor completely prevents diet-induced obesity**. Keystone Symposia, April. 12 – 17, 2015. Snowbird, Utah.

50. Ligen Lin, Kenji Saito, Jong Han Lee, Geetali Pradhan[#], Yong Xu and Yuxiang Sun. **aP2-Cre mediated ablation of GHS-R reduces adiposity and improves insulin sensitivity**. Keystone Symposia, April. 17 – 22, 2015. Snowbird, Utah.

The abstracts below were presented since I joined TMAU:

51. Jong Han Lee, Pingwen Xu, Kenji Saito, Geetali Pradhan[#], Yong Xu, and Yuxiang Sun. **Neuronal deletion of ghrelin receptor almost completely prevents diet-induced obesity.** Keystone Symposia, February 15—19, 2016. Banff, Alberta, Canada

52. Jong Han Lee, Ligen Lin, David Sheikh-Hamad, and Yuxiang Sun. **Ghrelin Receptor Regulates Adipose Tissue Inflammation in Aging**. American Diabetes Association 76th Scientific Sessions, June 10-14, 2016 in New Orleans, LA (*Selected for moderated poster presentation*)

53. Chia Shan Wu, Jong Han Lee, Geetali Pradhan[#], Qun Zang, Yuxiang Sun.¨ **Suppresses of ghrelin receptor in myeloid cells inhibits inflammation, attenuates obesity and enhances insulin sensitivity.** American Diabetes Association 77th Scientific Sessions, June 9-13, 2017 in San Diego, CA (*Oral presentation*)

54. Chia-Shan Wu, Geetali Pradhan[#], Shaodong Guo, Yong Xu, and Yuxiang Sun. **Suppression of ghrelin receptor in AgRP neurons alleviates diet-induced obesity by activating thermogenesis**. American Diabetes Association 77th Scientific Sessions, June 9-13, 2017 in San Diego, CA (*Oral presentation*)

55. Chia-Shan Wu, Qiong Wei, Hongying Wang[#], Geetali Pradhan[#], Shaodong Guo, Zheng Chen, Sridevi Devaraj, Yuxiang Sun. **Ghrelin in fasting-induced muscle atrophy in aging mice.** Annual Disease Research Symposium of Baylor Scott& White, Temple, Texas October 5&6, 2017 (*Second place poster award*)

56. Da Mi Kim, Hongying Wang[#], Yuxiang Sun. **Macrophage ghrelin receptor - a novel regulator for lipid metabolism and inflammatio**n. American Diabetes Association 78th Scientific Sessions, Orlando, Florida, June 22-25, 2018.

57. Yuxiang Sun. **Ablation of ghrelin exacerbates fasting-induced muscle atrophy by alerting gut microbiota**. 9th Scientific Symposium of Chinese American Diabetes Association, Orlando, Florida, June 20-22, 2018 (*Invited speaker*)

58. Da Mi Kim, Chia Shan Wu, Hongying Wang[#], Jong Han Lee, Wanbao Yang, Quan Pan, Chaodong Wu, Shaodong Guo, Yuxiang Sun. **The role of GHS-R in inflammation and metabolic** reprogramming. Nutrition Research Symposium 2018 of Texas A&M University (*2nd place poster presentation*)

59. Hongying Wang[#], Chia-Shan Wu, Sunja Kim, Jianrong Li, Xiaoqiu Xiao, Hui Zheng, Yuxiang Sun. **Ghrelin Receptor Regulates Neuro-inflammation in Aging through Macrophage Polarization.** Keystone symposium: New Frontiers in Neuroinflammation: What Happens When CNS and Periphery Meet? Keystone Resort, Keystone, Colorado, USA June 17—21, 2018.

The following abstracts were presented since my last promotion:

60. Da Mi Kim[#], Jong Han Lee, Chia-Shan Wu, Hongying Wang[#], Shaodong Guo, Yuxiang Sun. **Ghrelin receptor GHS-R is a novel regulator for meta-inflammation and insulin resistance.** Keystone symposium, Drivers of Type 2 Diabetes: From Genes to Environment, Seoul, South Korea. October 7-11, 2018.

61. Chia-Shan Wu, Jiyeon Noh[#], Ellie Tuchaai[##], Sridevi Devaraj, Zheng Chen, Yuxiang Sun. **Aging gut microbiome profile and ghrelin signaling in microbiome homeostasis.** Experimental Biology meeting in Orlando, April 6-9, 2019

62. Da Mi Kim, Jong Han Lee, Quan Pan, Wanbao Yang, Jiyeon Noh, Honying Wang, Chia-Shan Wu, Shaodong Guo, Yuxiang Sun. **Ablation of ghrelin receptor in myeloid cells attenuates diet-induced NAFLD**. American Diabetes Association 79th Scientific Sessions, San Francisco, June 7-11, 2019.

63. Quan Pan, Yunmei Chen, Da Mi Kim, Zheng Shen, Wanbao Yang, Xiaopeng Li, Yuxiang Sun, Shaodong Guo. **Transforming Growth Factor Beta 1 Acts as a Hepatokine in Control of Glucose and Energy Metabolism**. American Diabetes Association 79th Scientific Sessions, San Francisco, June 7-11, 2019.

64. Wanbao Yang, Weiqi Ai, Xiaopeng Li, Quan Pan, Zheng Shen, Yunmei Chen, Yuxiang Sun, Shaodong Guo. **p38α MAPK Mediates Glucagon-Induced Hepatic Glucose Production through Phosphorylation of Foxo1 at Ser273**. American Diabetes Association 79th Scientific Sessions, San Francisco, June 7-11, 2019.

65. Da Mi Kim, Jong Han Lee, Quan Pan, Wanbao Yang, Jiyeon Noh, Honying Wang[#], Chia-Shan Wu, Shaodong Guo, Yuxiang Sun. **Ablation of ghrelin receptor in myeloid cells attenuates diet-induced NAFLD**. 10th Annual Chinese American Diabetes Association (CADA) meeting, San Francisco, June 5-6, 2019. (*ADA-selected moderated poster presentation; Awarded NFSC travel award*)

66. Da Mi Kim[#], Jong Han Lee, Sahar Eshghjoo, Quan Pan, Jiyeon Noh[#], Honying Wang[#], Chia-Shan Wu, Shaodong Guo, Robert C. Alaniz, Yuxiang Sun. **Ablation of ghrelin receptor in myeloid cells attenuates diet-induced NAFLD in mice**. Keystone Symposia Conference on "Immunometabolism, Metaflammation and Metabolic Disorders", Vancouver, British Columbia. April 14 - April 18, 2019.

67. Ji Yeon Noh, Chia-Shan Wu, Daniel Villarreal[#], Sahar Eshghjoo, Shaodong Guo, Sridevi Devaraj, Robert C. Alaniz, Yuxiang Sun. **Ghrelin signaling alters gut microbiome and modulates intestinal inflammation in aging.** GeroScience Symposium in Oklahoma City, April 24, 2019 (*Awarded symposium travel award, NFSC travel award*)

68. Kristie Conde, Allison Vanschaik, Yuxiang Sun, and Troy A. Roepke. **KNDy neuronal sensitivity to ghrelin and the impact of 17 beta-estradiol**. Society for Behavioral Neuroendocrinology 20th Annual Meeting, Bloomington, IN. June 19 - June 23, 2019.

69. Da Mi Kim[#], Yuxiang Sun. **Ablation of GHS-R protects against LPS-induced sepsis through modulating inflammatory signaling and mitochondrial function of macrophage.** 33rd Society of Chinese Bioscientists in America (SCBA-TX), Annual Symposium. Houston, TX, May 1, 2019

70. Ji Yeon Noh[#], Yuxiang Sun. **Ghrelin signaling alters gut microbiome and modulates intestinal inflammation in aging.** 33rd Society of Chinese Bioscientists in America (SCBA-TX), Annual Symposium. Houston, TX, May 1, 2019 (*Awarded 3rd place for oral presentations among 36 presenters*).

71. Chia-Shan Wu, Jiyeon Noh[#], Ellie Tuchaai[##], Jennifer AA DeLuca, Kimberly F Allred, Clinton D Allred, Yuxiang Sun. **Suppression of Ghrelin Signaling Exacerbates Ulcerative Colitis in Older Mice**. The Gerontological Society of America's 71st Annual Scientific Meeting, Austin, Texas, November 13 - 17, 2019.

72. Chia-Shan Wu, Pengfei Ji, Yan Liu, Yuxiang Sun (2020). **Neuronal Deletion of Ghrelin Receptor Attenuates Aging-Associated Insulin Resistance and Cognitive Decline**. EXPERIMENTAL BIOLOGY 2020 (the abstract was accepted, the meeting was later canceled due to Covid 19 pandemic).

73. Hongying Wang[#], Chia-Shan Wu, Pengfei Ji[#], Ji Yeon Noh[#], Da Mi Kim[#], Alexandra Trott, David Threadgill, Hui Zheng, Xiaoqiu Xiao, and Yuxiang Sun (2021). **Neuronal ablation of GHS-R mitigates diet-induced neuro-inflammation showing improved memory**. Texas Alzheimer's Research and Care Consortium (TARCC) 2021 Scientific Symposium – Advances in Alzheimer's disease Science Research, and Care, January 28, 2021 via Zoom.

74. Colleen O'Reilly, Daniel Villarreal[#], Yuxiang Sun*, James Fluckey (2021). **Myeloid-Specific Inhibition of GHS-R on Metabolic Dysregulation in Skeletal Muscle During Experimental Type 2 Diabetes.** 1. Accepted by Experimental Biology (EB) April 27-30, 2021; *2. Won the Ph.D. Research Award at the regional American College of Sports Medicine (ACSM) conference; the abstract/poster/presentation was awarded the President's*

Cup, which is for the best research presented across all categories (UG, MS, Ph.D., Postdoc) at the regional ACSM meeting, Colleen also won the third place at the national President's Cup at the National ACSM conference in June 2021. **I provided the samples and assisted with data interpretation and poster preparation.*

75. Da Mi Kim, Jong Han Lee, Hye Won Han, Quan Pan, Sahar Eshghjoo, Gus Wright, Wanbao Yang, Ji Yeon Noh, Chia-Shan Wu, Shaodong Guo, Robert Alaniz, Yuxiang Sun (2021). **Nutrient-sensing GHS-R in macrophage reprogramming and meta-inflammation**. 25th annual Texas A&M University College of Medicine graduate student organization research symposium, April 30, 2021
(*Oral presentation – 8 oral presentations were selected among 75 abstract entries*)

76. Hongying Wang, Chia-Shan Wu, Pengfei Ji, Ji Yeon Noh, David Threadgill, Hui Zheng, Xiaoqiu Xiao, Yuxiang Sun (2021). **Neuronal ablation of GHS-R mitigates diet-induced neuro-inflammation showing improved memory**. Postdoctoral Research Symposium of Texas A& M University. Sept. 22, 2021

77. Veronica Sanchez, Hye Won Han and Yuxiang Sun (2021). **Ghrelin signaling regulates LPS induced activation of autophagy and NF-κB signaling in RAW 264.7 macrophages**. Undergraduate symposium at University of Texas at Austin, October 18, 2021 (*Oral presentation and received honorary mention)*

78. Ji Yeon Noh and Yuxiang Sun (2021). **Ghrelin receptor deletion on gut dysbiosis and experimental colitis in aging**. CADA-South Winter Retreat, Hilton College Station & Conference Center, December 11, 2021.

79. Hongying Wang and Yuxiang Sun (2021). **Neuronal ablation of GHS-R mitigates diet-induced neuroinflammation improving depression and memory**. CADA-South Winter Retreat, Hilton College Station & Conference Center, December 11, 2021.

80. Da Mi Kim and Yuxiang Sun (2021). **Nutrient-sensing GHS-R in macrophage reprogramming and meta-inflammation**. CADA-South Winter Retreat, December 11, 2021 at Hilton College Station & Conference Center, December 11, 2021.

81. Veronica Sanchez, Hye Won Han and Yuxiang Sun (2022). **Ghrelin signaling regulates LPS induced activation of autophagy and NF-κB signaling in RAW 264.7 macrophages**. Undergraduate symposium at Harvard University, Jan 21-23, 2022.

82. Wanbao Yang, Fenghua Zhou, Quan Pan, Kimberly Allred, Clinton Allred, Yuxiang Sun, David Threadgill, David Dostal, Carl Tong, and Shaodong Guo (2022). **Sexual Dimorphism in Control of Heart Failure in Insulin Resistance**. Experimental Biology Philadelphia, Pennsylvania, USA, April 2-5, 2022

83. Quan Pan, Zheng Shen, Wanbao Yang, Yuxiang Sun, and Shaodong Guo (2022). **FoxO1 Promotes Liver Fibrosis through TGF-&[beta]1 mediated Hepatic Stellate Cell Activation**. Experimental Biology Philadelphia, Pennsylvania, USA, April 2-5, 2022

84. Hongying Wang, Ji Yeon noh, Hye Won Han, Da Mi Kim, Yuxiang Sun. **Uncover the Profile of Neuroinflammation in Aged Mice**. TAMIN graduate symposium, TAMU, May 4, 2022.

85. Hongying Wang, Da Mi Kim, Zheng Shen, Yuxiang Sun. **Neuroinflammation of Aged Mouse brain**. Texas A&M University 6th Annual Postdoctoral Research Symposium, September 19th, 2022

86. Andrei Golovko, Huiping Guo, Johnathan Ballard, Xiangcang Ye, Hongying Wang, Yuxiang Sun, and Ben Morpurgo. **Production of mutant alleles in mouse macrophage and microglial cell lines by CRISPR/Cas9-Mediated Genome Editing**. 17th Transgenic Technology Meeting, Helsinki, Finland, September17-20, 2022,

87. Ji Yeon Noh, Hongying Wang, Yuhua Z. Farnell, Xiao-Di Tan, Gus Wright, Andrew Hillhouse, Yuxiang Sun. **Inflamm-Aging is Associated With Pro-Inflammatory Programming of Innate Immune Cells in the Colon**. Gerontological Society of America (GSA) annual meeting, Indianapolis, Nov. 2-6, 2022.

88. Hyewon Han, Jiyeon Noh, Xiangchang Ye, DaMi Kim, Hongying Wang, Yuxiang Sun. **Middle-age onset intermittent fasting regulates myeloid cell population in circulation and tissues**. Nutritional Science Graduate association (NSGA), 15-min thesis competition, Department of Nutrition, Texas A&M University, Nov. 17, 2022.

89. Zeyu Liu & Yuxiang Sun. **GHS-R Deficiency in Macrophages Alleviates Fructose-induced Inflammation**. Nutritional Science Graduate association (NSGA), 15-min thesis competition, Department of Nutrition, Texas A&M University, Nov. 17, 2022 *(Presentation winner – 3rd place)*

90. Ji Yeon Noh, Hongying Wang, Yuhua Z. Farnell, Xiao-Di Tan, Gus Wright, Andrew Hillhouse, Yuxiang Sun. **Inflamm-aging is associated with pro-inflammatory programming of innate immune cells in the colon**. Nutritional Science Graduate association (NSGA), 15-min thesis competition, Department of Nutrition, Texas A&M University, Nov. 17, 2022 *(Presentation winner – 1st place)*

91. Tingyuan Yang; Shuli Tang; Syuan-Ting Kuo; Dallas Freitas; Madison Edwards; Hongying Wang; Yuxiang Sun; Xin Yan. **Lipid Mass Tags via Aziridination for Probing Unsaturated Lipid Isomers and Accurate Relative Quantification.** Americna Society for Mas Spectrometery (ASMS) 2023 Houston, TX, June 4-8, 2023

4.3 My Dissertation/Thesis:

- **Master of Science thesis project** studied the effects of growth factors on mRNA expression of placental-specific genes, and determined whether growth factors are involved in the developmental regulation of these genes during pregnancy.

Thesis: *"The effects of transforming growth factor α on the expression of rat placental lactogens."*
Advisor: Mary Lynn Duckworth, Ph.D.

- **Ph.D. thesis project** was to investigate the molecular mechanisms of the tissue-specific regulation of a placental gene family, to characterize the regulatory elements involved in placental-specific expression, and to identify the transcription factors that interact with those elements.

  Thesis: *"Identification and characterization of cis- and trans-acting factors involved in the expression of the rat placental lactogen II gene."*
  Advisor: Mary Lynn Duckworth, Ph.D.

My Ph.D. work was awarded the **Apotex Fermentations Award for Excellence in Molecular Biology Research**, which is the **highest research honor** for graduate students in medical school at the University of Manitoba (**one per academic year**).

I was also awarded the very competitive **Canadian Institute for Health Research Postdoctoral Fellowship** to support 3-year stipend and conference travels of my postdoctoral training.

4.4 Presentations:

Scientific and Professional Presentations, also includes abstracts

I have been invited to give 88 talks (29 in last 4 years), 21 of which are as a keynote speaker/organizer at national or international meetings/symposia.

Invited guest lectures and seminars:

***Seminars and lectures since joining TAMU;* * Since Sept. 2018**

4.4.1 International:

Feb. 17, 2016 — Invited speaker, Lipid Metabolism and Bioenergetics Society of China-North America Forum. Fairmont Hotel-Angus meeting room, Banff, Canada
Title: *The role of ghrelin receptor in metabolism*

May 27, 2017 — Invited speaker, The 11th Congress of Chinese Society of Critical Care Medicine, Xian, China, May 25-28th.
Title: *The role of ghrelin signaling in sepsis*

May 28, 2017 — Invited speaker, Xi'an Jiaotong University.
Title: *Ghrelin signaling in obesity, diabetes and aging*

Nov 21, 2017 — Invited lecture - School of Medicine, Southeast University, Nanjing,
Title: *Ghrelin: from orexigenic signal to metabolic regulator*

Nov 23, 2017 **Selected VIP speaker to represent over 350 CADA member** - 21st Scientific Meeting of the Chinese Diabetes Association Society conference, Chongqing, China
Title: *Macrophage ghrelin receptor - a novel regulator for lipid metabolism and inflammation*

Nov. 26, 2017 Invited speaker, Chinese American Joint Xiangya Symposium on Metabolism
Title: *Ghrelin signaling in immunometabolism*

May 19, 2018 Invited **VIP speaker**, The 12th Congress of Chinese Society of Critical Care Medicine, Hangzhou, China, May 17-20.
Title: *Hunger hormone ghrelin signaling: a promising target for sepsis?*

May 22, 2018 Invited speaker – Second Military Medical University, Shanghai, china
Title: *Ghrelin signaling in metabolic reprogramming: new perspectives in adipose thermogenesis and macrophage*

July 14, 2018 Invited **Keynote speaker**, The Ghrelin Symposium, Satellite meeting of International Congress of Neuroendocrinology (ICN) 2018
Title: *Non-orexigenic roles of ghrelin signaling: GHS-R in thermogenesis & meta-inflammation*

Nov 22, 2018* Invited **Keynote speaker, Organizer & Session Chair,** International Conference on Nutrition and Health, Paris, France, Nov 22-23, 2018
Title: *Macrophage ghrelin receptor - a novel regulator for lipid metabolism and inflammation*

May 20, 2019* Invited **VIP speaker**, The 13th Congress of Chinese Society of Critical Care Medicine, Zhuhai, China, May 18-22.
Title: *Ghrelin Signaling Reprograms Macrophage Polarization in LPS-induced Endotoxemia*

Sept 6, 2020* Invited **Keynote speaker**, The 6th Chinese Sepsis Information Exchange Virtual Conference.
Title: *Nutrient sensing ghrelin signaling - a novel pathogenic factor for sepsis*

Oct. 19-20, 2020* Invited **Keynote Speaker & Organizer**, International webinar on Aging and Rejuvenation (ARC-2020)
Title: *Gut Hormone Ghrelin Signal is a Critical Link between Chronic Inflammation and Metabolic Dysfunction in Aging*

Nov. 26-28, 2020* Invited **Keynote speaker,** 4th Turkish Neuroendocrinology Congress (virtual meeting)
Title: *Ghrelin Receptor on Metabolic Health and Cognitive Function in Aging*

Aug. 8, 2021* Invited **VIP speaker**, The 15th Congress of Chinese Society of Critical Care Medicine, Zhuhai, China, Aug. 5-8. (via Zoom)
Title: *The tug-of-war between hunger and inflammation - ghrelin signal in septic shock*

July 20-21, 2021* Invited speaker, 3rd Edition - Global Webinar on ENDOCRINOLOGY & DIABETES (Zoom)
Title: *GHS-R in brown fat potentiates differential thermogenic responses under metabolic and thermal stresses*

Sept. 15-16, 2021* **Keynote speaker and Organizing Committee Member,** World Congress on Diabetes and endocrinology (WCDE) 2021 on "To Translate and Harness Novel Therapies in Diabetes and Endocrinology"
Title: *Gut hormone ghrelin signaling in meta-inflammation and insulin resistance*

Oct. 21-26, 2021* Invited speaker, 2nd International Conference on Precision Nutrition and Metabolism in Public Health and Medicine. Rhodes, Greece (invited by organizer Dr. Patrick J. Stover).
Title: *Dynamic roles of ghrelin signaling in nutrient sensing and immunometabolism*

4.4.2 National:

June 2016 Invited Talk, 7th Chinese - American Diabetes Association (C-ADA) Symposium, June 9-10, 2016 in New Orleans, LA.
Title: *Ghrelin: from orexigenic signal to metabolic regulator*

March 8, 2017 Invited speaker, Biomedical Seminar Series of Washington State University
Title: "Ghrelin: from orexigenic signal to metabolic regulator - studies of ghrelin signaling in thermogenesis and macrophage polarization"

June 9, 2017 **Invited session speaker**, 8th Chinese - American Diabetes Association (C-ADA) Symposium, June 9-10, 2017 in San Diego, CA
Title: *Ghrelin signaling in inflammation and LPS-induced sepsis*

June 2018 Invited Talk, 9th scientific symposium of C-ADA, June 20-22, 2018 in Orlando, FL

Title: *Ablation of ghrelin exacerbates fasting-induced muscle atrophy by alerting gut microbiota*

Nov. 21, 2020* Invited speaker & **Organizer**, Intercontinental Summit on Aging & Gerontology
Title: *Nutrient Sensing Ghrelin Signaling: A Critical Metabolic Pillar of Inflamm-Aging and Meta-Inflammation*

March 26, 2021* Invited talk, Diabetes Center, Indiana University (Zoom)
Title: *Nutrient-sensing ghrelin signaling in health and disease: an immunometabolic perspective*

Dec. 3, 2021 Invited talk, Department of endocrinology and animal biosciences, Rutgers University
Title: *The Good, the bad and the ugly of gut hormone ghrelin signaling in energy metabolism and inflammation*

June 23, 2022 Invited speaker, USDA multi-state NE1939 annual meeting, June 22-24, 2022, Ankeny, IA
Title: *Ghrelin signaling in obesity and aging*

Sept. 16, 2022* Invited talk, Department of Biochemistry and Molecular biology, University of New Mexico
Title: *Nutrient-sensing ghrelin signaling in health and disease: an immunometabolic perspective*

Oct. 31, 2022* Invited talk, Department of Nutrition, University of North Carolina at Greensboro
Title: *Nutrient-sensing ghrelin signaling in health and disease: trick or treat?*

4.4.3 Regional/State:

Mar. 24, 2016 Invited speaker, The TMC DDC GI Focus Group
Title: *Ghrelin receptor regulates inflammation and adiposity by modulating macrophage phenotypic shift.*

Feb. 9, 2017 Invited speaker, Texas Digestive DDC GI research Forum
Title: Ghrelin: from orexigenic signal to metabolic regulator

Feb. 11, 2017 Invited speaker, USDA/ARS Children's Nutrition Research Center (CNRC)
Title: *Our journey with ghrelin: from orexigenic signal to metabolic regulator*

Aug. 15, 2017 Invited speaker, Texas Medical Center Digestive Diseases Research Center (DDRC)

Title: *Ghrelin signaling in adipose and hepatic inflammation and lipid metabolism*

March 20, 2019* Invited Speaker, Biology of Aging seminar series, Huffington Center on Aging (HCOA), Baylor College of Medicine
Title: *Ghrelin signaling in inflamm-aging and healthspan*

May 18, 2019* Invited speaker, Society of Chinese Bioscientists in America (SCBA), Annual Symposium
Title: *Dynamic roles of ghrelin signaling in immunometabolism*

June 1, 2019* **Featured Speaker** for Health and Medical Care Panel, 2019 Southern U.S.-China Summit. Houston, TX
Title: *Nutrition and Health: what to eat, how much to eat, and when to eat*

Jan. 10, 2020* Invited Speaker, Chinese Bioscientists in America (SCBA-TX) - Texas faculty club
Title: *Ghrelin signaling mediated immunometabolic reprogramming in health, disease, and aging*

Feb. 29, 2020* Invited **Keynote speaker**, Texas Medical Center-Digestive Disease Center (DDC) symposium on "*The gut as an endocrine organ*". The lecture is also served as Continuing Medical Education (CME) credit for M.D. fellows.
Title: *Ghrelin signaling in hepatic inflammation and ulcerative colitis*

Nov. 18, 2020* Invited Speaker, Center for Metabolic and Degenerative Diseases Seminar, The Brown Foundation Institute of Molecular Medicine, The University of Texas Health Science Center at Houston
Title: *Nutrient-sensing ghrelin signaling in health and disease: an immunometabolic perspective*.

Dec. 3, 2021* Invited Seminar Speaker, Department of Animal Sciences, Rutgers, The State University of New Jersey
Title: *The neuroendocrine role of nutrient-sensing ghrelin signaling and beyond*

Feb. 18, 2022* Invited talk, Endo Grand Rounds, Division of Endocrinology, UT Southwestern Medical Center (Zoom)
Title: *Nutrient-sensing ghrelin signaling in health and disease: an immunometabolic perspective*

4.4.4 Local:

April 27, 2016 Invited speaker, The Healthy Aging Open Forum at TAMU
Title: *Multi-faceted roles of ghrelin in lifespan and healthspan*

May 19, 2017 Invited Speaker, South Texas Nutrition Obesity symposium (TAMU-Texas Medical Center Joint Obesity Forum)
Title: Ghrelin system in inflamm-aging

April 30, 2018 Microbial Pathogenesis and Immunology, TAMU
Title: *Ghrelin signaling in immunometabolism*

Oct. 10, 2018* Invited speaker, TAMU grand challenge symposium: Effects of diet on cross-talk between gut microbiota and host physiology,
Title: *Gut hormone ghrelin in macrophage reprogramming and gut-brain inflammation*

Dec. 16, 2018* Invited speaker, TAMU Diabetes Symposium on Immunometabolism and Chronic Disease.
Title: *The dynamic roles of ghrelin signaling in meta-inflammation and beyond*

April. 10, 2019* Invited speaker, Department of Medical Physiology, TAMU
Title: *How ghrelin does it all? Ghrelin signaling in meta-inflammation and inflamm-aging*

Dec.14, 2019* Invited speaker, Immunology Consortium Retreat of Texas A&M University
Title: *Ghrelin signaling mediated immunometabolic reprogramming in health, disease, and aging*

Sept. 28, 2020* Invited Seminar speaker, Texas A&M Institute for Genome Sciences and Society (TIGSS)
Title: *Immune resilience in health and disease: nutrient-sensing ghrelin signaling in obesity, colitis, and sepsis*

Oct. 7, 2022* **One of the 2 selected speakers for Precision Nutrition**. Texas A&M AgriLife Institute for Advancing Health Through Agriculture (IHA), inaugural event "Ag Solves When Aggies Solve"
Title: *Nutrient-sensing ghrelin signaling in health and disease: an immunometabolic perspective*

4.4.5 Departmental seminars: presented since Dec. 2015 – present

Dec 10, 2016 Department of Nutrition and Food Science, TAMU
Title: *The role of ghrelin signaling in nutrition and metabolism*

May 19, 2021* Department of Nutrition, TAMU

Title: *Nutrient-sensing ghrelin signaling in health and disease: the past, the present (immunometabolic advances), and the future*

Oct, 3, 2022 NUTR 210 class of Dr. Karen Beathard, Department of Nutrition, TAMU
Title: *Nutrient-sensing ghrelin signaling in health and disease: an immunometabolism perspective*

Seminars and lectures <u>before TAMU</u>:

4.4.1a International:

March 2005 Invited speaker, Department of Physiology, University of Manitoba, Canada
Title: *Ghrelin is an Important Regulator of Glucose Homeostasis Ghrelin's Role in Type 2 Diabetes*.

December 2009 **Invited speaker & <u>Session chair</u>**, special workshop on Longevity & Aging, Nutritional Genomics. BIT Life Sciences' 3rd Annual World Congress of Gene-2009 **(**WCG-2009**),** December 1-7, 2009 in Foshan, China.
Title: *Ghrelin Receptor Deletion Reduces Visceral Fat and Prevents Age-Associated Insulin Resistance*

October 2010 Invited speaker, Texas-Sichuan Biomedical Research Symposium, Oct. 24-26, Chengdu, China.
Title: *Ghrelin receptor regulates adiposity and insulin resistance during aging through a "Yin-Yang" balance of white and brown adipose tissues*

October 2010 Invited lecture, Zhengzhou University, Zhengzhou, China
Title: *The role of ghrelin singling in type 2 diabetes*

June 2012 Invited speaker & **<u>Session chair</u>**, BIT's 1st Annual World Congress of Diabetes 2012 (WCD 2012), June 15-17, 2012 in Beijing, China.
Title: *High Fructose Corn Syrup (HFCS) in Soft Drinks Induces Severe Adipose Inflammation and Insulin Resistance*

June 2012 Invited lecture, Central South University, Changsha, China. June 15.
Title: *Ghrelin receptor regulates adiposity and insulin resistance during aging through a "Yin-Yang" balance of white and brown adipose tissues*

February 2013 **Invited special lecture**, Lilly China Research and Development Center (LCRDC), Eli Lilly at Shanghai, China
Title: *Ghrelin signaling regulates adiposity and insulin resistance during aging:*

- *a "Yin-Yang" balance of white and brown fat*
- *phenotypic switch of adipose tissue macrophages*

November 2013 Invited speaker, The 4th World Gene Convention-2013, Hainan, China
Title: *Ghrelin signaling has unique properties in regulating obesity during aging independent from diet or exercise*

December 2013 Invited speaker, The 2nd International Conference and Exhibition on Obesity & Weight Management. Las Vegas, NE
Title: *The ghrelin receptor regulates obesity by modulating heat production*

December 2014 **Organizing committee & keynote Speaker**, The 3rd International Conference and Exhibition on Obesity & Weight Management. San Francisco, CA
Title: *Ghrelin receptor mediates HFCS-induced adipose inflammation and insulin resistance*

June 2015 Invited **Speaker, Organizer & Session Chair**, Society of Chinese Bioscientists in America (SCBA), 15th SCBA International Symposium 26-29, 2015 in Taipei, Taiwan.
Title*: Ghrelin signaling controls the "Yin-Yang" balance of white and brown fat during aging*

4.4.2a. National:

Nov. 2002 Invited **VIP speaker**, 4th International Symposium on Growth Hormone Secretagogues, Clearwater, FL.
Title: *Generation and Characterization of Growth Hormone Secretagogue Receptor Knockout Mice*

Nov. 2002 Invited speaker, Millennium Pharmaceuticals, Inc. Cambridge, MA,
Title: *Generation and Characterization of Ghrelin and Growth Hormone Secretagogue Receptor Knockout Mice*

March 2005 Invited speaker, Amgen Inc., Thousand Oaks, CA
Title: *Ghrelin's Role in Obesity and Diabetes*

June 2005 **Invited oral presentation,** 87th Annual Meeting of Endocrine Society, San Diego, CA.
Title: *Characterization of ghrelin and leptin double knockout mice - ghrelin's role in glucose homeostasis*

June 2007 **Invited oral presentation**, 89th annual meeting of Endocrine Society, Toronto, Canada
Title: *Ablation of the Ghrelin and Ghrelin Receptor Prevents Age-Dependent Insulin Resistance*

May 2008 — Invited speaker, Division of Aging Biology New Investigators Forum, NIH/NIA
Title: *The role of ghrelin receptor in glucose homeostasis during aging*

June 2012 — **Invited oral presentation**, 87th Annual Meeting of Endocrine Society, Houston, Texas
Title: *Ablation of ghrelin receptor attenuates HFCS-induced adipose inflammation and insulin resistance.*

July 2013 — Invited Talk, Department of Nutrition, Food and Exercise Sciences, The Florida State University.
Title: *Unraveling the multifaceted functions of ghrelin signaling*

4.4.3a Regional/State:

March 2007 — Invited speaker, 5th annual scientific retreat of Bone Disease Program of Texas
Title: *Ghrelin signaling pathway in bone metabolism*

Feb. 2008 — Invited speaker, Society of Chinese Bioscientists in America (SCBA) Texas Chapter faculty club
Title: *The role of Ghrelin and Ghrelin Receptor in Type 2 Diabetes*

Nov. 19, 2012 — Invited talk, Claude D. Pepper Older Americans Independence Center, University of Texas Medical Branch at Galveston
Title: *Ghrelin signaling regulates adiposity and insulin resistance during aging:*

- *a "Yin-Yang" balance of white and brown fat*
- *phenotypic switch of adipose tissue macrophages*

June 4, 2015 — Seminar talk, Dept. of Nutrition and Food Science, Texas A&M University,
Title: *Quest to understand the multifaceted roles of ghrelin - Focusing on nutritional regulation and obesity*

Dec 16, 2015 — Invited talk, University of Texas, South Western Medical Center
Title: *Ghrelin in cancer cachexia: anorexia, muscle waste & inflammation*

4.4.4a Local:

January 2008 — Invited talk, John A. Hartford Foundation - Center of Excellence Site Visit at Baylor College of Medicine
Title: R*ole of Ghrelin Receptor in Age-dependent Type 2 Diabetes*

March 2008 — Invited talk, Children's Nutrition Research Center at Baylor College of Medicine
Title: *The role of Ghrelin and Ghrelin Receptor in Type 2 Diabetes*

April 2008	Invited talk, Endocrine Grand Rounds at Baylor College of Medicine Title: *The role of Ghrelin and Ghrelin Receptor in Type 2 Diabetes*
June 2008	Invited talk, The Brown Foundation Institute of Molecular Medicine, The University of Texas Health Science Center Houston. Title: *Ghrelin and Ghrelin Receptor in Obesity and Type 2 Diabetes*
April 2010	Invited talk, Department of Molecular Physiology and Biophysics, Baylor College of Medicine Title: *Ghrelin Receptor Deletion Reduces Visceral Fat and Prevents Age-Associated Insulin Resistance*
August 2010	**Selected talk by the center director to present the center**, USDA site visit at Children's Nutrition Research Center at Baylor College of Medicine Title: *The role of Ghrelin Signaling in Obesity and Type 2 Diabetes*
January 2011	Invited talk, MCB R&D Workshop Seminar Series of Dep. of Molecular & Cellular Biology, Baylor College of Medicine Title: *Ghrelin receptor regulates adiposity and insulin resistance during aging through a balance of white and brown adipose tissues*
April 2011	Invited talk, Division of Leukocyte Biology, Dept. of Pediatrics, Baylor College of Medicine Title: *The role of ghrelin receptor in adipose tissue macrophage infiltration and insulin resistance*
August 2012	Invited talk, Diabetes Research Center, the Methodist Hospital Research Institute Title: *Ghrelin signaling regulates adiposity and insulin resistance during aging*
October 2012	Invited talk, Departmental Seminar of Molecular & Cellular Biology, Baylor College of Medicine Title: *Ghrelin signaling regulates adiposity and insulin resistance through a "Yin-Yang" balance of white and brown fat*
October 2013	Invited talk, Department of the Biochemistry and Molecular Biology, The University of Texas Medical School Title: *Ghrelin signaling in obesity and insulin resistance – a pivotal player in the "Yin-Yang" balance of white and brown fat*
June 2014	Invited talk, Center for Nuclear Receptors and Cell Signaling (CNRCS), University of Houston

Title: *The Multifaceted Functions of Orexigenic Hormone Ghrelin: The Roles of Ghrelin Signaling in Obesity and Diabetes*

Oct. 2014 — Invited talk, Human Genetics Center, Epidemiology, Human Genetics, and Environmental Science Division, University of Texas School of Public Health
Title: *Contrary to its name as the "orexigenic hormone", ghrelin signaling regulates long-term body weight by modulating energy expenditure not food intake*

April 2015 — Invited talk, Endocrine Grand Rounds at Baylor College of Medicine
Title: *Does ghrelin referee the rivalry between white and brown fat?*

4.4.5a Departmental seminars: presented Jan. 2009 – Nov. 2015

Jan. 7, 2009 — Huffington Center on Aging (HCOA), Baylor College of Medicine (BCM)
Title: *Studying Ghrelin's Role in Obesity & Diabetes: What's Known. What's Next?*

Dec. 17, 2009 — USDA/ARS Children's Nutrition Research Center (CNRC)
Title: *Ghrelin Receptor Deletion Reduces Visceral Fat and Prevents Age-Associated Insulin Resistance*

Apr. 28, 2009 — Huffington Center on Aging (HCOA), BCM
Title: *Ablation of ghrelin receptor improves insulin sensitivity during aging: a mechanistic exploration journey*

Oct. 6, 2010 — Huffington Center on Aging (HCOA), BCM
Title: *Brown Adipose Tissue and Aging*

Dec. 9, 2010 — USDA/ARS Children's Nutrition Research Center (CNRC)
Title: *Ghrelin receptor regulates adiposity and insulin resistance during aging through a "Yin-Yang" balance of white and brown adipose tissues*

Dec. 1, 2011 — USDA/ARS Children's Nutrition Research Center (CNRC)
Title: *High fructose corn syrup (HFCS) affects insulin resistance, and the ghrelin receptor has a role in HFCS-induced insulin resistance*

Dec 6, 2012 — USDA/ARS Children's Nutrition Research Center (CNRC)
Title: *Solving the puzzle of ghrelin receptor-mediated thermogenesis*

Oct 31, 2013 — USDA/ARS Children's Nutrition Research Center (CNRC)
Title: *Ghrelin receptor controls obesity: Is it all in our heads?*

Oct. 31, 2014	USDA/ARS Children's Nutrition Research Center (CNRC) Title: *Ghrelin signaling regulates body weight by modulating physical activity, not food intake. Should we name ghrelin the 'anti-exercise hormone'?*
Feb. 19, 2015	USDA/ARS Children's Nutrition Research Center (CNRC) Title: *The roles of ghrelin signaling in macrophages: Perspectives obtained from studying diet-induced obesity and acute inflammation*

4.5 Grants and Contracts

Ongoing and completed grants/contracts (*newest to oldest*):

4.5.1 <u>Ongoing Research Support</u>:

Texas A&M AgriLife Research FY23 Equipment Funding RFP **Sun (PI)** 2023

A shared cost of equipment purchase of $150,000.

NIH/NCI R01CA269726-01A1 **Giles (PI), Sun (Co-I)** 9/1/2022-8/31/2027

"Obesity, body fat distribution, and breast cancer risk: is visceral fat the culprit after menopause?"

External/Competitive; total $3,311,848 , Amount to PI $59,710

Institute for Advancing Health through Agriculture (IHA), TAMU **Sun (PI)** 2022 - 2026

Associate Member research support for project titled "Ghrelin: a unique biomarker for nutritional state and inflamm-aging"

$150,000/year for 3 years = $450,000

Texas A&M AgriLife Research FY22 Multi-State Funding RFP

Sun (PI) 4/29/2022-8/31/2022

Multi-state project NE1939, titled*"Improving the healthspan of aging adults through diet and physical activity"*

Summer salary and reagent support for $40,000

Texas A&M AgriLife research support for expansion of aging-related studies

Sun (PI) 2022 - 2025

Reagents/supply/equipment support of

NIH/NIDDK 1R01DK124588-01A1 **Guo (PI), Sun (Co-I)** 12/1/2021-11/31/2025

"Hepatic TGFbeta1 in Control of Type 2 Diabetes and NASH via FoxO1 Signaling*"*

The goal is to determine whether hepatic TGFb regulates liver functions via insulin-FoxO1 pathway in Type 2 Diabetes and NASH.

Total $2,474,938 ($519,896/year 1) (Sun - 1 month effort - $68,668 direct +$35,364 IDC = $104,032)

IHSFC Voucher, TAMU **Sun (PI)** 11/1/2021 - 10/31/2022
"Nutrient Sensing Ghrelin Receptor in BPA-Medicated Neuroinflammation and Alzheimer's Disease"

$ 9,874 direct + $5,085 IDC = $14,959

NIH/NIA 3R01AG064869-03S2 **Sun (PI)** 8/15/2021-
4/30/2022
"*Nutrient-sensing GHS-R in macrophage reprogramming and inflamm-aging*"

The support for replacing mice lost in Texas winter storm "Uri" 2021.

$35 direct + $18,025 IDC = $53,025

NIH/NIA 3R01AG064869-03S1 **Sun (PI)** 6/25/2021 – 4/30/2023
External/Competitive; Amount to PI $378,750 ($250,000 direct+$128,750 indirect)
"Nutrient sensing ghrelin signaling - a novel pathogenic factor for Alzheimer's disease"

The goal of this proposal is to determine the role and underpinning mechanism of microglia-specific deletion of GHS-R in neuroinflammation and AD pathogenesis.

The NIA program official informed me that this AD administrative supplement application received a high score during the review, I am now working on an NIH R01 on the topic.

T3 grant, TAMU President's Excellence Fund **Sun (Co-PI)** 1/1/2021 - 12/31/2022
Internal/Non-competitive; Total Amount $22,589 to ($10,000 to PI)
"Targeting insulin resistance via adipose steroid interconversion in control immunometabolism"

To determine whether adipocyte lipid turnover is controlled by androgens in a depot and sex-specific manner through local interconversion of steroids and modulation of T cell populations.

Pilot grant, Texas A&M Center for Environmental Health Research (TiCER)
(P30ES029067, PI: David Threadgill) 11/1/ 2020 – 10/31/3021
Internal/Competitive; Amount to PI $75,000 ($50,000 direct + $25,000 indirect)
"*Nutrient-sensing GHS-R in Bisphenol A-induced intestinal immunotoxicity*"

To determine whether GHS-R mediates the detrimental effects of Bisphenol A on intestinal inflammation.

IHSFC Voucher, TAMU **Sun (PI)** 10/1/2020 - 9/31/2021
Internal/Less-competitive**,** $9000 direct
"Role and Mechanism of Hunger Hormone Ghrelin Signaling in Bisphenol A-induced Immunotoxicity"

NIH/NIDDK 1R01DK120968-01A1 **Guo (PI), Sun (Co-I)** 9/12/2019- 5/31/2023
External/Competitive; Total $1,440,932; Amount to PI $72,653
"*Targeting Insulin Resistance by Estrogen Receptor in Control of Type 2 Diabetes Mellitus".*

The goal is to determine whether hepatic ERα prevents IRS1/2 degradation to activate PI3K-Akt and suppress Foxo-HO1, thus modulating hepatic mitochondrial function and glycemic regulation.

NIH/NIA R56AG063746-01 Chen (PI), Sun (Co-I) 9/1/2019-8/31/2021 External/Competitive; Amount to PI $37,500 ($25,000 direct+$12,500 indirect)
"*Role of RORs in age-related circadian and metabolic alterations*"

This project is to determine the function and mechanism of circadian machinery in metabolic aging.

NIH/NIDDK R01DK125081-01 Xue (PI), Sun (Co-I) 4/9/2020 – 1/31/2024
External/Competitive; Amount to PI **$**118,829($78,574 direct+$40,255 indirect)
"*Crosstalk between sensory ghrelin signaling and adipose tissue*"

This study investigates how ghrelin signaling in sensory neurons regulates adipose metabolism.

NIH/NIDDK R21AG061726-01A1 Wu (PI), Sun (Co-I) 9/30/2019 - 5/31/2022
External/Competitive; Amount to PI $3,505
"*Ghrelin deficiency predisposes mice to aging-associated inflammation through compromised gut function and microbiota dysbiosis*"

This study investigates the inter-relationship between ghrelin deficiency, gut barrier function, microbiota dysbiosis, and low-grade inflammation associated with aging and colitis.

T3 grant, TAMU President's Excellence Fund Sun (Co-PI) 1/1/2019 - 12/31/2020
Internal/Non-competitive; Total Amount $33,392 to ($10,000 to PI)
Title: *"3D printing bioartificial pancreas for diabetes research"*
To develop vascularized 3D printed platform to stimulate angiogenesis *in vivo*.

X-grant, TAMU President's Excellence Fund Sun (Co-Leader)
9/1/2019 – 2/28/2023
Internal/Competitive; Total Amount $325,000.00 ($32,171/Y1+ $33,237/Y2 = $65,408 to PI)
Title: "*3D Printed Bio-artificial Pancreas to Treat Diabetes*".
To design a 3D printed bio-artificial pancreas with a vascularized network and immunomodulatory microenvironment to protect encapsulated islet.

NIH/NIDDK R01 DK118334-01A1 Sun (PI) 7/1/2019 – 6/30/2023
External/Competitive; Total amount $1,248,677 ($929,746 direct + $318,921)
"*The role of GHS-R in macrophage reprogramming during meta-inflammation*"

The major goals of this project are to understand the roles and underpinning mechanisms of GHS-R in macrophage polarization, and delineate effects of macrophage GHS-R on meta-inflammation in adipose tissue and liver.

CADO study section – impact score: 16, percentile: 2

Significance of the grant: The proposal was given a remarkable 2% score, one reviewer commented the hypothesis of the proposal as "paradigm-shifting". Ghrelin is known to have effects in many tissues and organs, including adipose tissue and liver, the common assumption in

the field was that ghrelin activates its receptor GHS-R in these tissues. However, ghrelin receptor GHS-R expression in adipocytes is very low and there is no expression in hepatocytes, it puzzled the entire field for over a decade how ghrelin's effects in these tissues are mediated. My lab was the first to discover GHS-R can function as an immune regulator. We reported that GHS-R deletion attenuates diet-induced adipose and hepatic inflammation by shifting macrophages from pro-inflammatory M1 to anti-inflammatory M2 (*Nutrition & Diabetes* 2013, *Aging* 2016). We further demonstrated that GHS-R expression is highly expressed in macrophages and its expression increases under obese conditions. We thus made a provocative hypothesis in this proposal that the effect of ghrelin in adipose tissues and liver is due to the infiltration of GHS-R expressing macrophages into these tissues under obese conditions, which in turn triggers meta-inflammation and insulin resistance. We used loss- and gain-of-function animal/cell models to prove that GHS-R has cell-autonomous effects in macrophages and GHS-R metabolically reprograms macrophage polarization. These exciting new findings helped to resolve this decade-long puzzle in the field, uncovered the never-before-recognized immunoregulatory role of GHS-R, and revealed that GHS-R signaling is a critical link between metabolism and immunity. This study adds a new dimension to the biology of ghrelin signaling and has profound implications for health and disease. Blocking GHS-R in macrophages may serve as a promising immune therapy to prevent/treat obesity, diabetes, and inflammation.

Alzheimer's Disease Research Grant A2019630S Sun (PI) 7/1/2019 – 6/30/2023
BrightFocus Foundation
External/Competitive; Amount to PI ($300,000 direct only)
"*Ghrelin receptor mediated neuroinflammation in Alzheimer's Disease"*
The goal of this proposal is to determine the role and underpinning mechanism of myeloid GHS-R in neuroinflammation in Alzheimer's disease (AD).

NIH/NIA R01 AG064869-01 (Sun) Sun (PI) 4/1/2019 – 3/30/2024
External/Competitive; Total amount $1,548,722 ($1,040,000 direct + $508,722 indirect)
"*Nutrient-sensing GHS-R in macrophage reprogramming and inflamm-aging*"
The goal of this proposal is to understand the role and mechanism of GHS-R in macrophage reprogramming in aging, and its resulting impact on aging metabolism.
MCE study section - impact score: 15, percentile: 3
Significance of the grant: Researchers in the aging field have long searched for the common driving force of healthspan, aka "The Fountain of Youth". Emerging evidence shows that aging and many age-associated diseases are associated with chronic inflammation. Inflammation is now recognized as a hallmark of aging; hence the term "inflamm-aging" was coined within the last few years. We reported that GHS-R null mice are lean and insulin-sensitive, and the phenotype becomes more pronounced as the mice age (*Aging Cell* 2011). We also found that GHS-R expression is increased in macrophages of aging mice (*Aging* 8:178-191). Based on macrophages having unique plasticity in dynamic infiltration and polarization, we hypothesize that nutrient-sensing GHS-R is a sensor and driver of inflamm-aging: increased GHS-R expression in macrophages during aging promotes immune reprogramming, which leads to systemic inflammation and metabolic dysfunctions. Our preliminary results from our macrophage- and microglia-specific GHS-R knockout mice have revealed that GHS-R deletion in myeloid cells indeed leads to reduced inflammation in peripheral tissues (liver, fat, intestine) and brain in aging;

the mice exhibit improved metabolic and neurobehavior phenotypes. This is the first set of evidence that GHS-R is a good marker and key driver of inflamm-aging. It suggests a fascinating possibility that we may be able to control nutrient-sensing GHS-R signaling to rejuvenate physical and mental health in aging. This proposal received a 3% score; the reviewers applauded the great amount of *in vivo* aging data provided, and saw this project as having great importance and potential.

4.5.2 Pending Research Support:

NIH/NIEHS R21ES033849 **Sun (PI)** 09/01/2022-08/31/2023
External/Competitive; Total Amount $416,525 ($275,000 direct+$141,625 indirect)
"Hunger hormone ghrelin signaling exacerbates environmental toxin Bisphenol A-induced intestinal inflammation in colitis"

The goal of this proposal is to determine the role and underpinning mechanism of myeloid GHS-R in colitis-associated intestinal inflammation under the exposure of environmental toxicant Bisphenol A.

4.5.3 Completed Research Support:

IHSFC Voucher of TiCER, TAMU **Sun (PI)** 11/1/2019 - 12/31/2020
Internal/Less-competitive, Total $15,000 ($10,000 direct +$5,000 indirect)
"Gut hormone ghrelin - the culprit mediating immunotoxicity of Bisphenol A (BPA) in colitis?"

NIH/NIDDK R56 DK-118334-01 **Sun (PI)** 9/13/2018 – 3/12/2020
External/Competitive; Total Amount $366,431($250,000 direct + $166,431 indirect)
Title: "*The role of GHS-R in macrophage reprogramming during meta-inflammation*"

This project is to determine the role and pertinent mechanism of ghrelin receptor GHS-R in diet-induced inflammation and metabolic dysfunction.

NIA - Nathan Shock Award, Oklahoma Nathan Shock Center of Excellence for the Biology of Aging **Sun (PI)** 7/1/2017 – 5/30/2019
External/Competitive; Amount to PI $13,900
Title: "Protective effect of des-acyl ghrelin on muscle atrophy in aging"

This project is to determine whether des-acyl ghrelin ameliorates sarcopenia in aging mice and the underpinning mechanism.

NIH/NIA R01AG045828 – subcontract **Chen (PI)** 4/1/2017 – 3/31/2019
External/Non-competitive Amount to PI: $10,000
Title: "Role of clock-modulating small molecules against aging"

To provide consultation & services to Dr. Zheng Cheng, at University of Texas Health Science Center at Houston, for his studies in regard to the effects of clock-modulating small molecules on orexigenic ghrelin, anorexic obestatin, and other metabolic hormones such as insulin, glucagon, and leptin.

American Diabetes Association: Basic Science Award #1-15-BS-177
Sun (PI) 1/1/2015 – 12/31/2018
External/Competitive; Amount to PI $345,000
Title: "Ghrelin receptor in macrophages: A key mediator of both non-shivering thermogenesis in brown fat and adipose inflammation in white fat?"

This project is to determine whether GHS-R deletion in macrophages promotes phenotypic switch of macrophages, thus enhancing thermogenesis in brown fat and reducing adipose inflammation in white fat. This "proof-of-concept" study will give insight as to whether GHS-R antagonists have the potential to be a novel class of anti-obesity and anti-inflammation drugs.

USDA/ARS CRIS grant: ARS Project No. 6250-51000-059 **Sun (Lead Scientist)** 10/01/2014 – 09/31/2019 External/Competitive; Amount to PI $550,000 *
Title: "*Metabolic Effects of Ghrelin and Glucagon-Like Peptide Hormones*"

We hypothesize that gut-derived hormones, ghrelin and glucagon-like peptide 2(GLP-2), play key roles in the control of energy- and glucose-homeostasis. The aims of this project are to improve our understanding of the roles of ghrelin and GLP-2 in the pathogenesis and pathophysiology of obesity and diabetes, and to facilitate the identification of novel therapeutic targets for obesity.

*Year 1, Year 2 (with primary appointment): $200,000/year; Year 3, Year 4, Year 5 (with adjunct appointment): $50,000/year

Texas A&M AgriLife Research Start-up Funds[#] **Sun (PI)** 12/1/2015 – 11/30/2018
Title: "The role of ghrelin signaling in obesity, diabetes and aging"

The purpose of this fund is to help the PI to purchase essential major equipment, set up the lab, and build nationally competitive research programs.

[#] *This support was <u>not</u> included in the table of Grants Summary Chart.*

NIH/NIDDK P30 DK56338 pilot/feasibility grant from Texas Medical Center Digestive Diseases Center (DDC) **Sun (PI)** 3/1/2015-2/28/2017
Internal/Competitive; Amount to PI $25,000
Title: "The role of ghrelin receptor in dietary-induced steatohepatitis"

To determine whether macrophage GHS-R plays a crucial role in the pathogenesis of nonalcoholic steatohepatitis (NASH). We will test whether macrophage GHS-R deletion promotes macrophage anti-inflammatory polarization, and whether infiltration of GHS-R deficient macrophages into the liver mitigates dietary insult-induced NASH.

Ranked the highest among 19 applications

AHA Grant-in-Aid award 14GRNT18990019 **Sun (PI)** 1/1/2014 – 12/31/2016
External/Competitive; Amount to PI $140,000
Title: "*GHS-R promotes obesity and insulin resistance by regulating macrophage-mediated thermogenesis and adipose inflammation*"

To elucidate the roles of GHS-R in thermogenesis and inflammation. The GHS-R global null mice and the primary cells from the null mice will be used for phenotypical

characterization and for determining the functions of GHS-R in macrophages and adipocytes, thus setting the stage for further in-depth studies.

Ranked at 8.97%

Interim Bridge Fund of Baylor College of Medicine **Sun (PI)** 1/1/2014 – 6/30/2014
Internal/Competitive; Amount to PI $30,000
Title: "*The Role of Ghrelin Receptor (GHS-R) in Thermogenic Regulation"*

The goal is to characterize a newly-generated brown fat-specific knockout mouse line of GHS-R

AHA: National Innovative Research Grant 12IRG9230004
Sun (PI) 1/1/2012 – 12/31/2013
External/Competitive; Amount to PI $150,000
Title: "HFCS induces adipose inflammation and is a dietary risk factor for cardiovascular disease and stroke"

The goal of the project is to determine whether High Fructose Corn Syrup (HFCS) is a dietary risk factor for cardiovascular diseases. We will test whether HFCS consumption induces insulin resistance by promoting adipose inflammation, and whether the ghrelin receptor (GHS-R) mediates HFCS-induced adipose inflammation through regulation of nutrient-sensing and inflammatory pathways. This study will provide additional scientific evidence regarding *the* safety of HFCS, which may lead to a novel class of diabetic drugs.

Ranked at 0.68%

The Foundation for Prader-Willi Research (FPWR) **Timothy Wells (PI)**
09/01/2011 – 08/30/2012 External/Competitive; Amount to PI $5,000
Title: "*Generating a novel model of ghrelin-null Prader-Willi Syndrome*"

Prader-Willi syndrome (PWS) is a neurodevelopmental disorder exhibiting food obsession and severe obesity. PWS patients have elevated circulating ghrelin. The goal of this project is to cross ghrelin-null mice with a novel PWS mouse model (PWS-IC) to generate a ghrelin-null PWC-IC mouse model. This new model will ultimately be used to establish the role of elevated ghrelin signaling in PWS, and assist in making novel discoveries that elucidate actions mediated by ghrelin.

NIH/NIDDK P30 DK079638 Pilot & Feasibility Grant from Diabetes and Endocrinology Research Center at Baylor College of Medicine **Sun (PI)** 11/01/2010 – 10/30/2012
Internal/Competitive; Amount to PI $43,750
Title: "The role of the ghrelin receptor in thermogenesis during aging"

The major goal of the pilot project is to study the role of the ghrelin receptor (GHS-R) in non-shivering thermogenesis during aging. The thermogenic phenotype of GHS-R null mice will be characterized, and the molecular mechanisms will be investigated in immortalized brown adipose cells.

USDA/ARS CRIS grant: ARS 6250-51000-055 **Sun (PI)** 10/01/2009 – 09/31/2014
External/Competitive; Amount to PI $1,000,000
Title: "*The role of ghrelin and its receptor in nutritional regulation of energy and glucose homeostasis*"

The major goal of the project is to study the role of ghrelin signaling in nutritional regulation, and energy- and glucose-homeostasis. The study will further our understanding of nutritional interventions on health, help to improve dietary guidelines, and potentially lead to novel therapies for obesity and diabetes.

NIH/NIA: 1R03AG029641-01 **Sun (PI)** 07/01/2007 – 06/30/2011
External/Competitive; Amount to PI $129,360
Title: "*Ghrelin's role in glucose homeostasis during aging*"
The major goal of the project is to determine whether ghrelin plays a causal role in worsened glucose homeostasis during aging. Circulating and pancreatic levels of ghrelin, and pancreatic expression of the ghrelin receptor and UCP2, will be studied in different-aged wild-type and ghrelin-null mice.
Ranked at 6.8%

Pilot & Feasibility Project Grant from the John A. Hartford Foundation Center of Excellence (CoE) in Geriatrics **Sun (PI)** 07/01/2007-06/30/2008
Internal/Competitive; Amount to PI $35,000
Title: "*Ghrelin's role in aging-associated insulin resistance*"
The major goal of the project is to determine whether ghrelin plays a causal role in worsened insulin resistance during aging, and to elucidate whether ghrelin and ghrelin-regulated factors correlate with age-associated insulin resistance.

Pilot & Feasibility Project Grant from Diabetes and Endocrinology Research Center at Baylor College of Medicine **Sun (PI)** 07/01/2006 – 06/30/2007
Internal/Competitive; Amount to PI $50,000
Title: "*Ghrelin's Role in Type 2 Diabetes*"
The major goal of the pilot project is to study ghrelin's role in glucose-induced insulin secretion in Type 2 diabetes in *ob/ob* and *ghrelin-/-.ob/ob* mice.

Canadian Institute for Health Research Postdoctoral Award[#]
Sun (PI) 11/01/2000 – 10/31/2003
Title: "*Functional characterization of ghrelin and its receptor in aging*"
The purpose of the fund was to support my stipend and conference travels.
[#] *The support was <u>not</u> included in the table of Grants Summary Chat.*

4.6 Collaborations since joining TAMU

Collaborative research papers with TAMU investigators:

<u>Department of Nutrition and Food Science</u>: Drs. Shaodong Guo, Robert S. Chapkin, Peter Murano, Clinton Allred, Stephen T. Talcott, Susanne U. Mertens-Talcott.

<u>Outside of home department</u>: Drs. Stephen Safe, Yanan Tian, David J. Earnest, Robert C. Alaniz, John Lawler, Guoyao Wu, Bhimu Patil, Arul Jayaraman, Akhilesh Gaharwar.

Funded collaborative grants with TAMU investigators*:*

- NIH R01 grant 2019 - Co-Investigator on Dr. Shaodong Guo's grant;

- NIH R21 grant 2019 - Co-Investigator on Dr. Chia-Shan Wu's grant;
- TAMU T3 grant 2019 - Co-PI on a project titled *"3D printing bioartificial pancreas for diabetes research"*
- TAMU X-grant 2019 - Co-Leader on a project titled "*3D Printed Bio-artificial Pancreas to Treat Diabetes*"
- TAMU T3 grant 2021 - Co-PI on a project titled *"Targeting insulin resistance via adipose steroid interconversion in control immunometabolism"*

Submitted (pending/not unfunded) collaborative grants with TAMU investigators*:*

- Dr. Robert Chapkin in Nutrition, submitted COALS Grand Challenge Nutrition Obesity Pilot and Feasibility Grant.
- Erin Giles in Nutrition, submitted several NIH grant grants.
- Dr. Clinton Allred in NFSC, submitted an NIH grant.
- Dr. Susanne Talcott in NFSC, submitted 3 USDA grants.
- Dr. John M. Lawler in the Department of Health and Kinesiology, submitted a DOD grant and a NASA grant.
- Dr. Stephen H. Safe in the Veterinary School, submitted an NIH grant.
- Dr. Robert Alaniz in the Medical School, submitted an NIH grant.
- Dr. Arul Jayaraman in Chemical Engineering, submitted a multi-PI P30 pilot grant to TiCER at TAMU (*pending*).
- Dr. James Fluckey in the Department of Health and Kinesiology, submitted a NASA grant (*pending*).

Providing support & consultation to TAMU investigators:

- Dr. Bhimu Patil (2016-present): Mentoring and experimental support for Dr. Patil's students in Dept. of Horticultural sciences. *The collaboration has led to 3 publications.*
- David J. Earnest (2016-present): Experimental support for Dr. Earnest's metabolic project in the Department of Neuroscience and Experimental Therapeutics. *This has resulted in a publication in FEBS Journal.*
- Dr. Susan Talcott (2017-present): Mentoring and experimental support for Dr. Susan Talcott's Ph.D. student Chuo Fan in NFSC. *The collaboration has led to a book chapter and 1 publication.*
- Dr. Stephen H. Safe (2017-present): Experimental support for Dr. Safe's metabolic project in the Veterinary School, *which has led to a publication in Endocrinology and an ongoing project.*
- Richard Gomer (2021): Provided suggestion on experimental design for liver metabolism in Dept. of Biology.
- Dr. James Fluckey in the Department of Health and Kinesiology: I provided samples and data interpretation to Dr. Fluckey's student Colleen O'Reilly. *The study is titled "Myeloid-Specific Inhibition of GHS-R on Metabolic Dysregulation in Skeletal Muscle During Experimental Type 2 Diabetes". Colleen has won the Ph.D. Research Award at the regional American College of Sports Medicine (ACSM) conference, and his abstract/poster/presentation won the President's Cup, which is the best research presented across all categories (UG,*

MS, Ph.D., Postdoc). Colleen will now compete for the national President's Cup at the National ACSM conference in June 2021.

4.7 National/International Scientific Contribution/Recognition

4.7.1 Journal editorial boards, etc.

2021.1.1 – 2024.13.31 **Editorial Board Member**, ***World Journal of Diabetes*** (***WJD***) (IF3.247), Number ID: 03792070

2014-2020 **Editorial Board Member**, ***Inflammation and Cell Signaling***

2017-2018 **Lead Guest Editor** for ***Journal of Nutrition & Metabolism***

2019 **Special issue editor** for ***Frontiers in Immunology***, on "Effect of High- Fat Diet in Inflammation" (*Invited by Dr. Amy Field)*.

2020-Present **Review Editor**, ***Frontiers in Immunology*** - **Inflammation** (*Invited by Editor Dr. Guocang Fan)*.

2021-Present **Associate Editor** for ***Frontiers in Immunology*** - **Inflammation**
https://www.hindawi.com/publish-research/editors/editors-roles-and-responsibilities/
"With an Impact Factor of 6.429, Frontiers in Immunology is the 5th most-cited Immunology journal in the world. It is also the 1st most-cited open-access journal in Immunology."

2021- Present **Special Issue Gust editor** for ***Biomolecules***, on "Molecular Mechanisms of Obesity, Diabetes, Inflammation and Aging"
"Biomolecules is covered in the Science Citation Index Expanded (SCIE) in Web of Science and received a first Impact Factor of 4.694. The journal ranks 58/298 (Q1) in the 'BIOCHEMISTRY & MOLECULAR BIOLOGY' category."

4.7.2. Review panels, etc.

Grants:

2008 Pilot & Feasibility Project Grant reviewer for **"**The John A. Hartford Foundation"

2010 Grant reviewer (Ad Hoc) for "*Diabetes UK*"

2012 Grant reviewer (Ad Hoc) "AHA innovative research groups"

2013 Grant reviewer (Ad Hoc) for "NIH study section IPOD" (Feb 21-22, 2013 at Bethesda, M.D.)

Grant reviewer (Ad Hoc) for "AFAR's Biology of Aging Grant Programs"

2013-2015 **National Scientific Advisory Council of American Federation for Aging Research (AFAR)**

Grant reviewer (Ad Hoc) for Chinese National Science Foundation

Grant reviewer for "Italian Ministry of Health (MOH)"

2014 **Grant reviewer (Ad Hoc) for "NIH study section IPOD" (June 22 at Bethesda, M.D.)**

Grant reviewer (Ad Hoc) for Chinese National Science Foundation

External grant reviewer for "Michigan Diabetes Research Center (MDRC) Pilot/Feasibility Grant Program of the University of Michigan".

National Scientific Advisory Council of American Federation of Aging (AFAR)

2015-present **Research Grant Review Committee (RGRC) for American Diabetes Association (ADA)**

Served at final round grant review meeting, Oct. 2015 in Chicago

Served at final round grant review meeting, Oct. 2016 in Chicago

2016-present **National Scientific Advisory Council of AFAR**

2018 Review of AFAR Postdoc program applications

2018 Reviewer for USDA/ARS grants

2018 Reviewer for ADA postdoctoral fellowship grants

2019 Reviewer for AHA Fellowships - Basic Cell: Genetics and Epigenetics (Phone conference date: Oct 9, 2019)

2019 Reviewer for NIH Fellowships: Behavioral Neuroscience 2020/01 ZRG1 F02A-K (20) L, October 10-11, 2019 in Washington DC.

2019 External reviewer for UT Health San Antonio limited funding for research proposals on Low Carbohydrate and Ketogenic Diets

2019 Reviewer for NIH Mouse Metabolic Phenotyping Center program (*invited by Dr. Randall Friedline*).

2019 Reviewer for ADA postdoctoral fellowship grants

2019 Reviewer for NIH R15 Neuroscience AREA Grant Applications 2020/01 ZRG1 MDCN-R (86) A**,** Oct 31 & Nov 1, 2019

2020 Reviewer for NIH study section - Molecular and Cellular Endocrinology (MCE) June 4 & 5

2021 Reviewer for NIH study section - Cell Signaling and Molecular Endocrinology Study Section (CEME), March 4-5.

2021 P30 Center-sponsored Pilot Proposal, University of Louisville, proposal.

2022-2028 Standing member for NIH study section CSME

---

5. TEACHING

My current appointment consists of 30% Teaching

5.1 Program and Impact Statement:

5.1.1) Teaching contributions:

Since arriving at TAMU, I quickly emerged in teaching: taught an undergraduate class (NUTR481) a little over a month after my arrival, and created/taught a new graduate class (NUTR689) 8 months after my arrival. Following are the teaching/mentoring activities in which I have been involved:

Course developed: I developed a new graduate course, NUTR689 ("Nutrition and Healthy Aging"), and first taught it in Fall 2016. The course has now been approved as a permanent course NFSC 655. I have subsequently taught it in Spring of 2019 and 2020.

Classroom/online teaching for undergraduate and graduate students:
2016: Spring - NUTR 481 (1h), Fall - NUTR689 (3h, NUTR & HLTH AGING)
2017: Spring - NUTR 481 (1h); Summer - NUTR 489 (3h, online); Fall – NUTR 481 (1h)
2018: Spring - NUTR 481-903 (1h) & 906 (1h); Fall - NFSC 481-930 (1h) & 932 (1h)
2019: Spring - NFSC 655 (3h, NUTR & HLTH AGING); Fall – NFSC 481 (1h)
2020: Spring - NFSC 655 (3h, NUTR & HLTH AGING), NFSC 481 (1h); Fall - NFSC 320 (3h, Obesity online)
2021: Spring - NFSC 320-599 (3h) & 700 (3h) Obesity online

Directed studies/research courses offered to undergraduate and graduate students throughout the year: NUTR/NFSC 485, NUTR/NFSC 491, NUTR/NFSC 685, and NUTR/NFSC 691. In addition, I have also offered directed studies/research courses to students in other departments: NRSC485 since 2018 and GENE491 since 2019.

Undergraduate student research mentoring: I have mentored 21 undergraduate stundets in my career. Three was before TAMU, at Baylor College of Medicine, and 18 is since joining TAMU (16 since last promotion). My teaching/mentoring has made significant impacts on the undergraduate students, not only taught them the knowledge/skills, most importantly piqued their interest in science. One student was awarded high impact leaning research award 2 times, 2 students had co-author papers, and almost all of them were accepted into medical school or graduate school immediately upon graduation.

Graduate student/postdoc mentoring: I have mentored 11 graduate stundets and 12 postdoctoral fellows in my career. Before TAMU, at Baylor College of Medicine, I trained 1 Ph.D. student and 1 joint-training Ph.D. student, both had excellent publication records (each had 8-10 papers with 3-4 as first author). Among the 12 postdoctoral fellows I mentored at Baylor, 5 obtained tenure track faculty position and 1 obtained research assistant professor position. Since joining TAMU, I have mentored 5 Ph.D., 3 M.Sc. and 1 joint-training Ph.D. students in my lab. To date, 1 Ph.D. and 2 M.Sc. students have graduated at TAMU. In addition to my own trainees, I have served on 29 graduate committees since my last promotion in 2018, with 26 TAMU students and 2 students in other institutions.

5.1.2) Teaching philosophy/approaches:

My overarching goal of teaching is to pique students' interests in knowledge, promote active learning habits, and foster critical thinking skills. In my teaching, I intentionally teach the following areas: 1) Solid understanding of the fundamentals of nutritional science; 2) Intentionally nurturing problem-solving skills beyond simple fact memorization; 3) Critical evaluation of scientific literature: not only knowing "what", but "why" and "how"; 4) The ability to apply information learned to their other courses, projects, and everyday lives. For the fundamental knowledge outlined in the syllabus, I use various methods to re-enforce the key concepts to make sure everyone in the class understands them. To nurture scientific interests and foster critical

thinking skills, I use the most current scientific literature and sometimes the publications from my lab to conduct classroom discussions. To improve my skills and effectiveness in teaching, I have attended many "Center for Teaching Excellence" seminars and implemented a number of pedagogical methods in my classes. I have also audited classes of my peers, actively involved in dialogs of curriculum design/improvement, teaching strategy, and assessment discussions. My teaching is guided overall by the principle of "teach someone to fish and they will food for a lifetime." I believe that teaching students how to seek and apply knowledge is more important than simple memorization of some specific facts. I want them not only to benefit from the knowledge they learn in class, but also to truly improve their ability to become lifelong active learners – "to know how to learn", which will benefit them for the rest of their careers/lives.

5.1.3) Student evaluation scores:

I taught many sections of a senior seminar (NUTR/NFSC481). I developed and taught new graduate course NUTR689/NFSC655, *"Nutrition and Healthy Aging"*. I also taught an online course for Obesity (NUTR489/NFSC320). My teaching is well received by the students, the effectiveness is supported by the high student evaluation scores (almost all are above departmental average).

- NUTR481: Spring 2016 @ 4.67; Spring 2017 @ 4.57, Fall 2017 @ **4.88**; Fall 2018 - NFSC481-930 @ 4.71/ NFSC481-932 @ 4.63, Fall 2019 - NFSC481-930 @ **4.86**, Spring 2020 - NFSC481-930 @ 4.53 (the class was switched from in person to online due to pandemic).
- NUTR689: Fall 2016 @ 4.81; NFSC655: Spring 2019 @ **4.82**, Spring 2020 @ 4.74 (the class was switched from in-person to online due to pandemic).
- Previously, at Baylor College of Medicine (BCM), my graduate teaching to Ph.D. and M.D./Ph.D. students on the subject of *"Biology of Aging and Age-related Diseases"* received very positive evaluations as well.

5.1.4) Special contributions/Award:

1). I played an instrumental role in revising the course from a long-form to a short-form to make it more appropriate for 1 credit hour. In 2018, I initiated the 481curriculum review and developed the shorter form of the course to be more appropriate for 1 credit hour (to emphasize quality over quantity). This new format is well received by students and the critical thinking aspect of the course has been significantly improved.

2). I developed new graduate course NUTR689/NFSC655, *"Nutrition and Healthy Aging",* which has enriched the graduate course offer of the department and filled a gap in the university course catalog.

3). In 2019, I received an AgriLife Neuhaus-Shepardson teaching grant award from the College for improving the 481 teaching with the use of technology.

5.1.5) Pedagogical approaches used:

Graduate course "Nutrition and Healthy Aging" NUTR689/NFSC655 (3 credit hours):

To fill the gap of aging nutrition education at TAMU, I developed this graduate course by leveraging my M.D. training and the aging research we do in my lab. The course is a combination of the biology of aging and geriatric nutrition; the class teaches theories of aging, age-related diseases, and nutrition interventions for lifespan and healthspan. I hold high educational standards, evident by the amount of work the students are required to complete. My goal for these courses is

to prepare future scholars. I encourage independent and critical thinking in order to propel students to become active learners. I introduced a "F(acts) and Q(uestions)" system in our weekly journal discussions to promote active engagement and peer-interactions. For the F&Q, students are required to identify at least 5 new facts they learned from the paper and at least 2 questions that were not addressed in the paper; they are asked to find answers for their own questions and then share them with the class. All students loved this F&Q exercise; they told me it was a fun, effective, and stress-free learning experience.

In addition to extensive lectures on basic principles and cutting-edge research on aging nutrition, I also added additional lectures and enrichment materials based on the interests and projects of the students in the class. I incorporated grant proposal writing, journal and poster presentations, and a "3-minute thesis contest". The students are asked to write an "aging spin-off" research proposal of their own research projects using the NIH R21 format. I teach how to write each component of a grant, share samples of good/bad grant proposals, and I provided 2 rounds of detailed critiques of their proposals in writing and in person. At the end of the semester, the students present their proposals orally as a poster or "3-minute thesis contest presentation", I use this as an opportunity to teach students how to articulate their ideas and enhance their oral presentation skills. One semester, we had a mini-symposium. I printed the students' posters and posted them in our conference room, and invited their major professors/peers to judge their presentations. That was hugely successful, near half of the department showed up for their presentations. In the spring of 2020, due to the pandemic, we could not have an in-person symposium, so we had a "3-minute thesis contest" for them to present their proposal in class, training them how to give an effective "elevator pitch". Students were very active in asking questions and gave each other suggestions. Because of this class exercise, two students later entered the university "3-minute thesis contest". The proposal writing/presentation not only helped to reinforce the knowledge they learned in the class, but also helped them to form a "road map" for their projects and motivated them to be "drivers" of their studies. Two students have now submitted their proposals for F31 fellowship applications, and they have asked me to give critiques and to write letters of support for their applications. Several students in my class have invited me to serve on their committees; some have initiated collaborations with my students in the class due to the bonds they formed in the class.

*Success and impact of this new graduate cour*se: "Nutrition and Healthy Aging" fills a critical gap in university course offerings. I was able to offer the new course just 8 months after I joined the faculty (while I was teaching NUTR481 and setting up my lab). I was honored to receive an evaluation score of 4.81 when it was offered for the first time; most importantly, I am pleased to know that the students truly enjoyed the class. Students told me that the class not only enriched their fundamental knowledge regarding aging nutrition, but also improved their critical thinking ability and writing/presentation skills. I am humbled by students' comments, e.g.: "I really enjoyed this course and the topics that were discussed"; "This course is not your standard course; it made the class more interesting and interactive"; "One of the best classes I have ever had at TAMU"; "Instructor motivated me to learn and gave me flexibility with my ideas"; "Dr. Sun is fantastic & really cares about each student. Consistent feedback given to enhance our learning", etc.

Undergraduate senior seminar NUTR/NFSC481(1 credit hour):

481 is to teach undergraduate graduating seniors how to do literature searches, create and present PowerPoint presentations, and write mini-reviews on a nutrition subject of interest. In order to make my teaching more engaging and effective, I have utilized a number of creative strategies.

For instance, to cater to different learning styles, I provided teaching materials in different formats for the same subject matter (e.g., PowerPoint, handouts, YouTube videos, etc.), so the students can choose what suits them best. One student told me that he needed to do MeSH heading/subheading searches for his job (after graduation). I taught that in the class, but he forgot how to do it; he then recalled that I provided them a YouTube video link, so he was able to find the answer himself to complete the task he was assigned. To promote active learning, I grouped students in pairs and taught them how to critique their class partner's work. I then provided feedback on both students' original work as well as their evaluations/comments for their peers. So the students not only can learn from their own work, but also learn from their peers' work, and understand how to better-critique papers. Many students at the exit interview or online class evaluation commented that this class was among the most beneficial and interesting class of their entire undergraduate learning, and they wished they had taken it earlier. Many students told me that the literature search, writing, and public speaking skills they learned in this class help them greatly in their job research, interview, and research/writing tasks for their work.

Curriculum revision and pandemic adaptation: I always encourage students to give me critical feedback both at midterm and final, and I take swift actions to address issues in class or individually. 481 is a "C" course, which has both writing and oral presentation components; this is very challenging for undergrads who never had any research experience. While students overwhelmingly enjoy the 481 course, many students feel it is too much work for a 1 credit hour class. I thus initiated a curriculum review with Assistant Provost of Undergraduate Studies Ms. Valerie M. Balester to evaluate how we can meet the "C" course criteria, while at the same time adjusting the workload to be appropriate for 1 credit hour, so students can focus on quality and not just quantity. After several discussions, I decided to reduce the 2500-word writing requirement to 1250-words, and converting a 15-minute oral presentation to 8 minutes. I piloted the short form in my class; while it was more demanding to coach the students to do well with the short form, it turned out to be a big success in improving class participation and critical thinking. I was able to get the students not only to deliver the "what", but also to answer the "why" and "how". Students were much more eager to ask questions, and the classes become more active and engaged. The student evaluation score for Fall 2019 of 481 class piloting the new format for the first time was 4.85, which was very encouraging and rewarding to me. I have since passed the revised syllabus/materials/experience on to other faculty instructors, and mentored 3 graduate student instructors for the entire semester.

In order to promote high-impact learning, I have also met with Librarian Ms. Paria Tajallipour at the medical library to strategize how to teach literature search more effectively. We co-taught the literature search class at the Education Center of the library, which allows students to do hands-on interactive exercises, which received great feedback. In Spring 2020, due to the Covid-19 pandemic, all classes were forced to switch from in-person to remote in the middle of the semester. The 481 oral presentation is a tough task for students; presentation and scoring/critiquing are more effectively delivered in person. To minimize the negative impact of the pandemic on students, I worked with the students to record their presentations on YouTube (which allows the class not only to judge the content but also the effectiveness of delivery (such as body language and professional demeanor). The presenting students send the YouTube link and PowerPoint slides to the entire class, so the rest of the class could score the presentation the same way as an in-person class. I then provided the presenting students feedback via a Zoom and/or email. Despite the challenge of the pandemic, the combination of YouTube, PowerPoint, and email communication allowed me to deliver all components of the 481 class as if it had been conducted

as an in-person. To promote long-term learning, I encourage the students not to treat their writings as a class exercise only, but to answer some intriguing questions that truly interest them, I challenged them to work toward publication quality. I have worked with 2 students to revise their 481 writing assignments after their graduation, and we aim to submit those reviews shortly. Many students over the years (nearly ½ of the class every year) have asked me to write reference letters for their graduate schools or job applications, which is an indication that the students like the class and enjoy my teaching.

Undergraduate online course "Obesity" NFSC320 (3 credit hours):

NFSC320 teaches perspectives of obesity in the context of food science, nutrition, health and psychology. The class uses eBooks (295-pages), recorded PowerPoint lectures on eCampus, and 1-hour timed exams for every 3 chapters. One disadvantage of online class is that lacks the personal touch. To compensate for this deficit, I make replying to students' emails the top priority of my day. I also offer Friday Zoom office hours, so students can get all their questions answered. I made a narrated PowerPoint video to introduce myself to the students. I also set up an "About Me" 1-page assignment for the students on eCampus, which allows me to get to know the students (143 students in Fall 2020 and 115 in Spring 2021), so I can choose materials to better meet their interests and needs. To enrich the learning experience and promote critical thinking, I regularly share current research articles/news clips that are relevant to the course content and explain how those materials related to the content of the textbook; this gives them a sense how knowledge is discovered and evolves. To help the students familiarize themselves with the exam format, I designed 3 practice tests and posted them on eCampus 1 week before each exam to help students to improve their exam readiness; these practice exams are well received by students. After each exam, I reach out to the students that receive less than 70% to make sure they understand the questions they got wrong, and encourage them to read relevant content in the book.

5.1.6) Mentoring of undergraduate/graduate students, postdocs, and junior faculty:

In addition to regular classroom teaching, I also offer Directed Studies/Research courses to undergraduate and graduate students throughout the year: NUTR/NFSC485, NUTR/NFSC491, NUTR/NFSC685, and NUTR/NFSC691. I also offered directed studies/research courses to students in other departments: NRSC485 since 2018, and GENE491 since 2019. ***Undergraduate mentoring*:** Based on the students' interests, I matched them up with my graduate students, so they can obtain hands-on experience. It is amazing to see how the undergraduate-graduate pairs learn and advance together. I discuss papers with them, critique their writing, and conduct mid- and end-of-term feedbacks. So far, I have mentored 21 undergraduates (16 since last promotion), 2 students have completed their undergraduate scholar thesis, 1 received undergraduate high-impact learning research award 2 times, 2 have published co-author papers, and most of the undergraduates have been accepted to medical schools or graduate schools immediately upon graduation. ***Graduate mentoring*:** At Baylor College of Medicine (BCM), I had a Ph.D. student from BCM Translational Biology and Molecular Medicine program and a joint-training Ph.D. student in my lab. The BCM Ph.D. student Geetali Pradhan successfully obtained a competitive 2 year student fellowship, received conference travel awards, and graduated with an impressive publication record (3 first author and 7 co-author papers). Dr. Pradhan now is a manager of Scientific Innovations at Force Communications. The joint-training Ph.D. student Xiaojun Ma also had impressive accomplishments as well (4 first author and 4 co-author papers), and Dr. Ma now is a tenured associate professor, active in both research and clinical practice. ***Postdoc mentoring*:** I am also

very proud that among 12 of my former trainees 5 were offered tenure-track faculty positions (1 in US, 1 in Korea and 3 in China) and 1 was offered research assistant professor immediately following their training in my lab. One of them now has been promoted to tenured Associate Professor. I encourage and support students/postdocs to go to various conferences/symposia to present their work, and to create opportunities for them to know the research community. I have close relationships with all my former trainees; many of them have kept active collaborations with me for years after they left my lab. I continue to share animal models and reagents, and to provide mentor support to them for publications and grants. ***Junior faculty mentoring at TAMU****:* I have helped Research Assistant Professor Dr. Chia-Shan Wu in my lab to successfully obtain an NIH R21 grant and a DOD grant.

For my trainees, I strongly believe that knowledge and experience can only be gained through vigorous hypothesis-driven and evidence-based scientific research. I hold high standards for my trainees. At the same time, I always strive to be very nurturing and supportive, I follow their progress closely, and guide them through each process including experimental design, problem-solving, data collection/analysis, manuscript preparation, presentations, and publications. I want to make sure they receive well-rounded training; my focus is to improve their problem-solving ability not just to get the job done, which requires more time and effort. I hold weekly lab meetings and individual monthly meetings to provide timely feedback and guidance. I am always available to them; I always ask probing questions to make them think rather than just give them answers. I frequently share new literature and exchange thoughts with them to broaden their knowledge and pique their scientific curiosity. I find it very fulfilling to see a hypothesis proven, and I make sure to celebrate every new discovery they made. I am the most loyal cheerleader of my students, and I think it is extremely important that I lift their spirits up when things are not going as planned (my students all told me they deeply appreciate it).

Summary of impact and personal reflection of teaching/mentoring:

Since joining TAMU, I taught many sections of senior seminar NUTR481, I created/taught a new graduate course NUTR689/NFSC655, I also taught a big online class, NFSC320. When there was a shortage of instructors, I volunteered to take on extra classes and coach graduate instructors. In my career, I have mentored 21 undergraduate students, 8 Ph.D./3 M.Sc. students, and 12 postdoctoral fellows. To date, 4 Ph.D. and 2 M.Sc. students have graduated, 6 fellows have obtained faculty positions (5 on tenure track and 1 on research track). Since my last promotion, I have mentored the research of 16 undergraduate/9 graduate students, 1 postdoctoral fellow, and 1 junior faculty, as well as served on 29 graduate thesis committees. The effectiveness and impact of my teaching/monitoring are supported by the trainees' success in publications/awards, career outcomes, high student evaluation scores, and the positive comments from students and my peers (see *Item 13* of the dossier). As noted in publication section, the original articles contributed by undergraduate students (##) is 3, graduate students (#) is 21 and postdoctoral fellows (&) is 20. My teaching/mentoring has expanded the knowledge of students/fellows, most importantly it has piqued their curiosity of knowledge, advanced their critical thinking skills, and helped to boost their confidence. I believe that the biggest impact that I have made on my trainees is empowerment, which will have lasting effects on their careers. *I enjoy teaching and mentoring, and I find the experience extremely rewarding. Teaching is a noble responsibility, and a great opportunity to inspire, to empower, and to make a difference beyond one's own life. I consider teaching/mentoring a special privilege, and I will do my very best to honor it.*

5.2 Summary Table of Courses Taught

	Semester and Year	**Enrollment** (total hours)	**Student Evaluation**	**Dept. Average**
Undergraduate				
NUTR 481: Senior Seminar (1 h)	**Spring 2016**	**14**	**4.67**	4.69
NUTR 491: Research	Fall 2016	2 (4h)		4.40
NUTR 481: Senior Seminar (1 h)	**Spring 2017**	**16**	**4.57**	4.61
NUTR 491: Research	Spring 2017	1(4h)		
NUTR 489: Obesity (3 h online class)	**Summer 2017**	**7**	**N/A**	
NUTR 481: Senior Seminar (1 h)	**Fall 2017**	**12**	***4.88***	4.56
NUTR 491: Research	Fall 2017	1 (2h)		
NUTR 481-903: Senior Seminar (1h)	**Spring 2018**	**16**	**N/A** (no average provided)	4.47
NUTR 481-906: Senior Seminar (1h)	**Spring 2018**	**18**	**N/A** (no average provided)	4.47
NUTR 491: Research	Spring 2018	1 (0h)		
NUTR 485: Directed studies	Spring 2018	1 (3h)		
NFSC 481-930: Senior Seminar (1h)	**Fall 2018**	**16**	**4.71**	4.51
NFSC 481-932: Senior Seminar (1h)	**Fall 2018**	**14**	**4.63**	4.51
NFSC 485: Directed studies	Fall 2018	1 (3h)		
NFSC 491: Research	Fall 2018	2 (6h)		
NRSC 485: Directed studies	Fall 2018	1 (3h)		
NFSC 485: Directed studies	Spring 2019	1 (3h)		
NFSC 491: Research	Spring 2019	3 (6h)		
GENE 491: Research	Spring 2019	2 (4h)		
NRSC 485: Directed studies	Spring 2019	1 (2h)		

NFSC 485: Directed studies	Fall 2019	1 (3h)		
NFSC 491: Research	Fall 2019	1 (0h)		
NFSC481-930: Senior Seminar (1h)	**Fall 2019**	**20**	**4.86**	
GENE 491: Research	Fall 2019	1 (2h)		
GENE 491: Research	Spring 2020	1 (1h)		
NFSC481-930: Senior Seminar (1h)	**Spring 2020**	**21**	**4.53** (pandemic)	
NFSC 485: Directed studies	Spring 2020	2 (2h)		
NFSC 491: Research	Spring 2020	1 (3h)		
NFSC 491: Research	Summer 2020	1 (2h)		
GENE491: Research	Fall 2020	1 (2h)		
NFSC320-599: Obesity (online – 3h)	**Fall 2020**	**143**	AEFIS: Q2 = 2.97/3 Q5 = 3.68/4	
NFSC 485: Directed studies	Fall 2020	1 (2h)		
NRSC 485: Directed studies	Fall 2020	1 (3h)		
GENE 491: Research	Spring 2021	1 (1h)		
NFSC320-599: Obesity (online – 3h)	Spring 2021	**57**	AEFIS: Q2 = 3/3 Q5 = 3.92/4 AEFIS: Q2 = 3/3 Q3 = 3.62/4 (objectives) Q4 = 3.38/4 (critical thinking) Q5 = 3.92/4 (organization) Q7= 4/6 (Feedback) **Q8 = 4.42/5** (Learning environment) Q9 = 2.62/3 (Method) Q10 = 2.86/3 (Promoting learning**)**	
NFSC320-700: Obesity (online – 3h)	Spring 2021	**58**	AEFIS: Q2 = 3/3 Q5 = 3.87/4	

			AEFIS: Q2 = 3/3 Q3 = 3.52/4 (objectives) Q4 = 3.70/4 (critical thinking) Q5 = 3.87/4 (organization) Q7= 4.52/6 (Feedback) **Q8 = 4.35/5** (Learning environment) Q9 = 2.61/3 (Method) Q10 = 2.86/3 (Promoting learning**)**	
NFSC 485: Directed studies	Spring 2021	1 (0h)		
NFSC 491: Research	Spring 2021	2 (6h)		
NRSC 485: Directed studies	Spring 2021	4(9h)		
NRSC 485: Directed studies	Fall 2021	2 (5h)		
NUTR 481-930: Senior Seminar (1h)	Fall 2021	18	AEFIS: Q2 = 3/3 Q3 = 4/4 (objectives) Q4 = 3.76/4 (critical thinking) Q5 = 3.76/4 (organization) Q7= 5.59/6 (Feedback) **Q8 = 4.94/5** (Learning environment) Q9 = 3/3 (Method) Q10 = 2.94/3 (Promoting learning**)**	
NFSC 491: Research	Fall 2021	4 (12h)		
481	**Fall 2022**	16	AEFIS: Q2 = 2.88/3	Student Comments:

			Q5 = 3.56/4 **Q8 = 4.75/5**	"Valued quality of work, not just quantity (8 page term paper) She is AMAZING!!! " "Dr. Sun was very supportive and helpful, and truly cares about the success of her students She encouraged us to seek out a topic of our interest to truly help us inspire our writing. And for someone to be passionate about their job and what they do is rare nowadays in professors and she is one of the few"
Graduate				
NUTR 685 Directed studies	Spring 2016	2 (3h)		
NUTR 691 Research	Spring 2016	2 (2h)		
NUTR 689: Nutrition and Healthy Aging (3h)	**Fall 2016**	**8**	**4.81**	4.69
NUTR 685 Directed studies	Fall 2016	2 (2h)		
NUTR 691 Research	Fall 2016	2 (2h)		
NUTR 685 Directed studies	Spring 2017	2 (2h)		
NUTR 691 Research	Spring 2017	2 (3h)		

NUTR 691: Research	Summer 2017	1(3h)		
NUTR 685 Directed studies	Fall 2017	4 (11h)		
NUTR 691 Research	Fall 2017	2 (6h)		
NUTR 685 Directed studies	Spring 2018	4 (11h)		
NUTR 691: Research	Spring 2018	2 (4h)		
NUTR 685 Directed studies	Summer 2018	2 (7h)		
NUTR 691: Research	Summer 2018	2 (5h)		
NFSC 685: Directed studies	Fall 2018	4 (14h)		
NUTR 691: Research	Fall 2018	2 (10h)		
NFSC 655: Nutrition and Healthy Aging (3h)	**Spring 2019**	**7**	**4.82**	
NFSC 685 Directed studies	Spring 2019	5 (17h)		
NFSC 691: Research	Spring 2019	2 (10h)		
NFSC 691: Research	Summer 2019	3 (7h)		
NFSC 685 Directed studies	Summer 2019	4 (14h)		
NFSC 691: Research	Fall 2019	1 (5h)		
NFSC 685: Directed studies	Fall 2019	5 (15h)		
NFSC 655: Nutrition and Healthy Aging (3h)	**Spring 2020**	**6**	**4.74 (pandemic)**	
NFSC 685: Directed studies	Spring 2020	4 (15h)		
NFSC 691: Research	Spring 2020	5 (11h)		
NFSC 685: Directed studies	Summer 2020	5 (18h)		
NFSC 691: Research	Summer 2020	4 (9h)		
NFSC 685: Directed studies	Fall 2020	5 (13h)		

NFSC 691: Research	Fall 2020	4 (11h)		
NFSC 685: Directed studies	Spring 2021	6 (22h)		
NFSC 691: Research	Spring 2021	5 (20h)		
NFSC 685: Directed studies	Summer 2021	3 (12h)		
NFSC 691: Research	Summer 2021	4 (12h)		
NUTR 685: Directed studies	Fall 2021	2 (8h)		
NUTR 691: Research	Fall 2021	4 (17h)		
NUTR655 (3h)	**Spring 2022**	9	AEFIS: Q2 = 2.71/3 Q5 = 3.67/4 **Q8 = 5/5**	Student Comments: "Every time I was in class I was engaged in some kind of way. Even the homework, the F&Q, helped me to think outside the boxand ask questions I would not have asked otherwise." "The professor was always ready for class and I love it how she always started with what the next few days would bring and what assignments were coming up as well as deadlines. This is why I was always surprised when I heard people were not submitting things on time. The professor was always clear

				about deadlines and important dates" "I feel the feedback was always on point and I think they made my presentation/paper better" "Yes, her style makes us think a lot. Ultimately, this method is so much more efficient than just making us memorize facts that we will forget the moment we walk out of the room. I greatly appreciate it."
NUTR 689-602 (1)	**Fall 2022**	11	AEFIS: Q2 = 2.5/3 Q5 = 3.57/4 **Q8 = 4.71/5 (instructor specific)**	

5.3 Class descriptions:

Classes taught at TAMU:

NUTR689/NFSC655 (3h): **Nutrition and Healthy Aging** (*become a permeant course as NFSC655 in spring of 2019*)

This course is a fusion of the biology of aging and geriatric nutrition. It integrates aging theories, the pathophysiology of age-associated diseases, nutritional needs of older adults, and nutritional interventions for longevity and healthy aging. The goal of this course is to teach the basic principles of nutrition associated with aging and major age-associated diseases, and to advance critical thinking skills in understanding/interpreting aging nutrition literature, and to inspire aging nutrition research.

Learning Objectives: By the end of this course, students will gain solid knowledge and understanding in the following areas:

- Theories of aging, physiological and pathological changes related to aging (e.g., energy imbalance, metabolic dysregulation, aging thermodynamics), and major age-associated

diseases (e.g., obesity, diabetes, chronic inflammation, cardiovascular disease, sarcopenia, osteoporosis, cancer, Alzheimer's disease).

- Major biological challenges associated with aging, and aging paradoxes such as over-nutrition *vs.* malnutrition, cell growth *vs.* cancer, longevity *vs.* fertility, etc.
- Nutritional characteristics of aging and age-associated diseases: Nutritional impacts on longevity and vitality, dietary and lifestyle interventions for prevention and treatment of major age-associated diseases.
- Hallmarks of animal models in aging: Principles of basic, translational, and clinical aging research designs.
- Critical thinking in nutrition and aging research, effective oral and written communication of aging nutrition subjects (via journal presentation, grant proposal writing, and poster presentation as mini-research symposium or "3 min thesis contest").

NUTR481 (1h): Senior Seminar

The purpose of this course is to teach students how to search literature, review scientific articles in nutritional sciences, understand/critique literature, and develop oral presentation and writing communication skills. It is a course with "W" and "C" designations, which culminates in oral presentations, research papers, and critical discussions. It is a required course for all seniors of nutrition major.

Learning Objectives:

1) Students will demonstrate the ability to conduct independent research by identifying and critiquing scientific literature related to nutrition.

2) Students will be able to understand experimental data and summarize the information.

3) Students will demonstrate the ability to think critically and formulate arguments based on experimental data.

4) Students will demonstrate effective writing and oral communication skills appropriate for a professional scientific setting.

NUTR489/NFS320 (3h): Obesity (online)

The goal of this online class is to teach perspectives of obesity in food science, nutrition, health, and psychology. Students study obesity factors in relation to genetics, exercise physiology, and sociology with emphasis on food and nutrition. A combination of formative and summative assessment techniques is used to assess students' learning.

Learning Objectives:

- Explain the evidence-based recommendations for assessment and treatment of weight management, ADA - Adult Weight Management Evidence-Based Nutrition Practice Guidelines, and NIH/NHLBI Clinical Guidelines on the identification, evaluation, and treatment of overweight and obesity.
- Describe policies, environments, and/or systems that can be changed at the community level or higher to reduce or prevent obesity.
- Identify risk factors and co-morbidities associated with overweight/obesity.
- Identify genetic, metabolic, and environmental contributors to obesity.
- Explain the linkage between obesity and inflammation.
- Identify behavioral predictors of successful weight maintenance.
- Evaluate the efficacy of behavioral, dietary, and physical activity approaches for weight management.

- Evaluate emerging food science technology and research strategies, and approaches to weight management that involve food ingredients, calorie intake, eating time/frequency, etc.

5.4 Graduate Student Committee Involvement

	Since Last Promotion (Sept. 1, 2018 - present)		Career	
Degree	**Chair or Co-Chair**	**Member**	**Chair or Co-Chair**	**Member**
Master of Agriculture				
Master of Science	3	3	3	5
Ph.D.	5	14	6	14
Ph.D. (*joint training – experiments in my lab and degree from China*)	1		2	
Post-doctoral	1		12	4

5.5 Cumulative Summary of Trainees: Graduate Students and Post-Doctoral Fellows

Type Trainee	Chair	Committee Member	Year Enrolled	Year Graduated	Awards	Current Position
Graduate						
Xiaojun Ma/Ph.D. (Joint training with China)	Y		2010	2012	**- 4 first author and 4 co-author papers; - 9 accepted abstracts**	**Associate professor in China active in research and clinical practice**
Geetali Pradhan/Ph.D. (Beta cell biology)	Y		2011	April, 4, 2017	**- 2 year fellowship - Endocrine society Travel award; - 3 first author and 7 co-author papers;**	Manager, Scientific Innovations at Force Communication, Indianapolis

					- 9 accepted abstracts	
Lu Chen/MSc (Nutrition)		Y	2015 (I joined 2016)	2018		MBA in TAMU
Shannon Lloyd/MSc (Nutrition)		Y	2014 (I joined 2016)	2017		Practicing Dietician
Sena Ozseker /Ph.D. ***(Baylor College of Medicine)***		Y	2013	2018	Program of Developmental Biology	HHMI junior scholar
Da Mi Kim/Ph.D. (Nutrition)	Y		2016	March. 18, 2021	**- Korean National Scholarship; -- NFSC Outstanding Graduate Student Award; -2nd Place of Poster of University Nutrition Symposium; --2nd Place in Hagler Fellowship**	Postdoc at TAMU
Daniel Villarreal/MSc. (Nutrition)	Y		2016	Aug 9, 2019	**1 first author and 3 co-author papers**	Research Scientist at NCD Cure
Hongying Wang/PhD (Neuroendocrinology)	Y		2017	May 10, 2019	**1 first author and 4 co-author papers**	Postdoc at TAMU
Ji Yeon Noh/Ph.D. (Nutrition)	Y		2017		**TAMU Excellence Scholarship; Regional symposium presentation award; Oklahoma GeroScience**	

					Symposium travel award	
Erika Garcia-Villatoro/Ph.D. (Nutrition)		Y	2014 (I joined 2016)	2021		
Chuo Fang/Ph.D. (Nutrition)		Y	2015 (I joined 2016)	2019	First author & Co-author papers with us	Postdoc at UC at Irvine
Jordan Hillman/MSc (Nutrition)		Y	2015 (I joined 2016)	2018		
Michael Salinas/Ph.D. (Nutrition)		Y	2016			
Quan Pan/Ph.D. (Nutrition)		Y	2016	2020	We have published together	Postdoc at TAMU
Zheng (James) Shen/Ph.D. (Nutrition)		Y	2016			
Jose Perez/Ph.D. (Horticultural sciences)		Y	2016	2019	We have published together	Scientist at USDA
Hongying Wang /Ph.D. (Joint training with China)	Y		2017	2019	Several first and co-author papers	Postdoc at TAMU
Pengfei Ji/MSc (Nutrition)	Y		2018	2021		
Hye Won Han/Ph.D. (Nutrition)	Y		2018			
Rece Norton/MSc (Nutrition)	Y		2019	April 9, 2021		MBA at Mays business school at TAMU
Liangyu Qian/Ph.D. (Chemical Engineering)		Y	2019			
Wanbao Yang/Ph.D. (Nutrition)		Y	2017	2020	We have published together	Postdoc at TAMU
Weiqi Ai/Ph.D. (Nutrition)		Y	2018			
Kaivalya Deo/ Ph.D. (Biomedical Engineering)		Y	2019	2022		
Wen Jiang/MSc		Y	2019	2021		PhD at TAMU

(Nutrition)						
Zeyu Liu/ Ph.D. (Nutrition)	Y		2021			
Hanna Mayo/MSc (Nutrition)	Y		2021	2022		Transfer to another university for athletic scholarship
Karen Corleto/ Ph.D. (Nutrition)		Y	2018			
Meanie Mascorro/MSc (Nutrition)		Y	2019	2022		
Dallas Freitas/ Ph.D. (Chemistry)		Y	2019			
George R Plasko/ Ph.D. **(*UT San Antonio*)**		Y	2017		Integrated Biomedical Sciences (IBMS)	
Liangyu Qian/Ph.D		Y	2020		Chemical Engineering, TAMU	
Siddu Shiva/Ph.D		Y	2020		Chemical Engineering, TAMU	
Post-doctoral						
Dr. Ligen Lin	Y		2010	2013	Keystone conference travel award; Have published together as recent as 2021	**Associate professor with tenure, leading active nationally-funded programs in China**
Dr. Jong Han Lee	Y		2012	2016	Have published together as recent as 2021	**Assistant professor in Korea**
Dr. Odelia Bongmba	Y		2013	2015		
Dr. Preeti Kanikarla Marie	Y		2015	2016		
Dr. Chia-Shan Wu	Y		2015	2016	Received NIH R21 and DOD grants	Research Assistant

					under my mentorship based on the work in our lab.	professor at TAMU
Dr. Jing Yue	Y		2011	2012		Physician in China
Dr. Qiong Wei, M.D.	Y		2012	2014	1 first-author and 3 co-author publications, just submitted another first-author manuscript together in 2021	**Associate professor & Deputy director of endocrinology in China**
Dr. Adelina Meadows, M.D.	Y		2012	2014		Pediatrician in Indiana
Dr. Yuezhen Lin, M.D.	Y		2009	2010	Maintaining collaborative relationship	**Associate professor at Baylor College of Medicine**
Dr. Se-young Cho		Y	2016	2017		Scientist in Korea
Dr. Yan Liu, M.D.	Y		2019	2020		Physician scientist in China
Dr. Hongying Wang	Y		2021			

Accomplishments of graduate students and postdocs:

All students have publications upon graduation. Some have won prestigious awards for their presentations at national or regional meetings. Five of my former trainees are independent faculty in the US or Asia. I have helped a research assistant professor in the lab to obtain NIH R21 and DOD grants.

5.6 Cumulative Summary of Trainees: Undergraduate Students

Undergraduate Student mentored

Since Last Promotion (Sept. 1, 2018 - present)	Since joining TAMU	Career
16	18	21

Type Trainee	Course & Credits	Major	Student Year e.g., U1, U2 etc.	Calendar Year	Awards	Current Position
Undergraduate						
Adelina Gunawan			2002-2005			Physician
Salmaan A. Jawaid			2005-2007			Physician
Sean Liang			2012			
Rachel L. Rose	NUTR491		U2, U3	2016, 2017		
Aselin Puthenpurai (NUSC)	NUTR491	NUTR	U3, U4	2016, 2017, 2018	**Undergraduate research scholar** *	Medical student, Arkansas College of Medicine (ARCOM)
Ellie Tuchaai#	NUTR491 -HNR	NUTR	U2, U3, U4	2017, 2018, 2019, 2020	**Co-author paper with us; Undergraduate research scholar - High Impact Research award in 2019 & 2020** #	Medical student, McGovern Medical School in Houston/Texas Medical Center
Brooke A. Rebenschied	NFSC 491	BIMS	U4	2018, 2019		
Cristina E. Okoniewski,	NFSC 485	PSYC	U3	2018		
Jazmin S. Ramos	NRSC 485	BIMS	U4	2018, 2019		
Rece Norton	NFSC 485	NFSC	U4	2019		Graduate student in my lab at TAMU
John P. McKean	GENE491	GENE	U4	2019		
Ritika Gangarapu	GENE491	GENE	U3	2019 2020 2021		Medical student, Texas A&M

						Medical School
Matthew S. Herrera	NFSC485 NFSC491	BIMS	U3 U4	2019 2020	Have written a review paper	Medical student, Long School of Medicine in San Antonio
Sai Depark Venkata Muthyala	BIOL491	BIOL	U3 U4	2019 2020	**Co-author on a published high profile paper with us** [&]	
Alanna C. Henry	NFSC491	NUTR	U4	2021		
Gabrielle L. Woodcox	NFSC485	NUTR	U1, U2	2020 2021		
Caitlyn M. Cooper	NRSC485	PHLT	U3 U4	2020 2021		
Bryan Liu	NFSC491	BIOL	U4	2021		
Lauren E. Absher	NRSC485	PSYC	U3	2021		
Gregory Dr. Engel	NRSC485	USVM	U4	2021		
Sarah J. Perry	NRSC485	PSYC	U4	2021		

Accomplishments of undergraduate students: The research experience has proven to be very beneficial to the undergraduate students. Most of them were accepted into medical school or graduate school immediately upon graduation.

[*] **Aselin Puthenpurai completed Undergraduate Research Scholar Thesis**, titled "*Characterization expression patterns of ghrelin receptor in the brain using novel reporter mouse line*", which helped to pave the way for her to get into medical school.

[#] ***Ellie Tuchaai* did Undergraduate Research with Honor in my lab.** Ellie had received the departmental undergraduate High Impact Research Award in both 2019 and 2020 (each award constituted a $500 scholarship given to the student and $1,000 given to the lab to support research activities). Ellie was a co-author in ***Journal of Neuroendocrinology***. 2019;e12763.

[&] Sai Depark Venkata Muthyala was a co-author in ***Aging*** 2021 (in press). Aging is a prestigious journal in aging research.

2022 Julie Jevanicky Undergraduate Research Scholarship, Department of Nutrition, TAMU

2023 Conley Boatright, Undergraduate Research Scholarship, Department of Nutrition, TAMU

5.7 Summary of Peer Teaching Evaluation

(*Please see teaching evaluation in Item 13 of the dossier*).

***2017 Summary of overall teaching evaluation* by Drs. Peter Murano and Boon Chew in Dept. of Nutrition and Food Science** *(Please see letter of evaluation in Item 13 of the Dossier):*

The peer teaching evaluation performed by Drs. Peter Murano and Boon Chew covered the period of Jan. 2016 to May 2017, including undergraduate senior seminar NUTR481, online undergraduate course NUTR489 on Obesity, and a new graduate course NUTR689 that I developed on Nutrition and Healthy Aging.

For undergraduate nutrition seminar NUTR481, they noted that: I made great efforts to accommodate all learning styles by using different media. I used pedagogical strategies such as positive interdependence, individual accountability, peer interactive learning, interest-driven enhancement, and personal coaching to enhance the effectiveness of my teaching.

For undergraduate distance education course NUTR489 on Obesity, they noted: I utilized formative and summative assessment techniques to assess students. I frequently posted questions on eCampus for facilitating test preparedness and learning enrichment.

For the graduate course NUTR689, they noted that I taught aging biology applied to the geriatric population. To advance and stimulate critical thinking skills and to inspire students' interests in aging nutrition research, I incorporated journal presentation, grant proposal writing, and poster presentation in the form of a mini-research symposium. The pedagogy techniques I used including lecture segments, pre-planned rhetorical questions, examples of real research questions from my lab, group discussions that enabled students to share their thoughts.

Drs. Murano and Chew have concluded that I am a knowledgeable and effective instructor who has adopted many creative pedagogical techniques to enhance teaching effectiveness. They also noted that I receive high evaluation scores and overwhelmingly positive comments from the students.

***2021 Summary of individual course material reviews* by Drs. Jenna Anding and Bradley Johnston in Dept. of Nutrition; Dr. John Lawler in Dept. Health and Kinesiology; Dr. Susanne Talcott in Dept. of Food Science** *(Please see letters of evaluation in Item 13 of the Dossier).*

For the graduate course NUTR 689/NFSC655 by Drs. Susanne Talcott and John Lawler:

NUTR 689/NFSC655 is a new graduate course I created and taught at TAMU. Drs. Susanne Talcott and John Lawler have carefully reviewed over 20 documents of course materials, student feedback, enrichment exercises, etc., and concluded that the course contains all required elements and clearly communicates the objectives, learning outcomes, schedule of assignments/exams, and grading aspect. They recognize my great enthusiasm and knowledge for the subject matter, appreciate the rigor and innovative high-impact approaches I use in the classroom, and my dedication and active engagement in improving the course.

Dr. Talcott commented that my M.D., Ph.D. training and the research in my lab well-positioned me to develop and teach this course. The class is well-designed to cover both the breadth and depth of the subject matter, and the class is very well-managed and organized with each unit having all required materials/objectives clearly outlined. Dr. Talcott noted that I made strong efforts to accommodate diverse learning styles and promote student learning through a variety of methods/technologies. Dr. Talcott concluded that this class was delivered in a highly effective and successful manner by utilizing a wide range of materials and approaches, including paper reading/discussion to enforce the concepts learned in the class, take-home exams to assess the depth of knowledge, in-class poster presentations to enhance oral communication skills, etc. Dr. Talcott appreciates that I often discuss current scientific debates in class, which helps students to navigate, interpret and understand current literature.

To nurture students' critical thinking skills, I created a "F(acts) & Q(uestions)" system for weekly journal discussions, where students outline the most important facts of their assigned readings and then think of related questions not addressed in the papers. Both Drs. Talcott and Lawler really like the "F & Q" approach. Dr. Talcott thinks it is a creative way to help students to comprehend materials better and think outside the box, and it is a very effective way to help students to obtain deep insight into literature. Dr. Lawler thinks it is a particularly novel way to promote interaction, critical thinking, and reasoning in a friendly atmosphere.

In this class, as enrichment, I teach how to write research proposals and help students to complete an NIH R21-style proposal. Dr. Talcott commented that this is extremely beneficial to students, which will make a lasting impact on their future careers. Dr. Lawler stated that that teaching student grant writing is an incredibly useful form of enrichment and practical skill development that is crucial for one's research career. Also, Dr. Lawler sees the "3-Minute thesis contest" proposal presentation as an innovative mechanism to help students to develop coherent grant ideas and how to convey a complex subject to a lay audience in a limited time.

Lastly, Dr. Talcott noted that my student evaluations of the course are very positive. I communicate effectively and teach with great enthusiasm, and students have greatly benefited from the depth of my experience and knowledge. Dr. Lawler appreciates that I challenge the students while providing clear guidance, and I provide detailed and constructive feedback for both proposal and innovative exercises. Dr. Lawler concluded that my progressive approach to graduate education is manifested in stellar student evaluations, comments, and scores, and he sees it as an indicator of excellence in the design and conductance of the course. Dr. Lawler quoted students' comments: "She gave helpful critiques all throughout the course and answered questions at a timely manner. I personally received lots of individual help after class from Dr. Sun and she always gave me meaningful and useful notes." "She made changes to this class previously to make sure it was "quality over quantity" and I thought that made a huge difference. This class made me step out of my comfort zone with the oral presentation and I would have appreciated this class earlier in my career."

For the undergraduate senior seminar course NUTR/NFSC481 by Drs. Jenna Anding and Bradley Johnston:

NUTR481 is a capstone senior seminar that is a communication-intensive course involving both written and oral communication. Both Drs. Anding and Johnston have taught this course recently, and have firsthand experience with the course. After reviewing my course materials, they concluded that the syllabus contains clear learning objectives, and is detailed and well organized. They felt that the assignments are evenly spaced, diverse, and built in a logical sequence (i.e.,

identify a research question, find relevant articles to answer one's question, draft an essay to reflect on critical appraisal of literature, peer-review of a fellow student's essay, and incorporating peer and instructor feedback to produce a final essay), providing plenty of learning opportunities for students. They appreciated that each week, I provide lecture content, lists of activities, assignment due dates, and additional readings and resources. They also like the fact I share the examples of papers and PowerPoint presentations from previous students as well as a detailed score sheet with students, so the students can learn from their peers, be made fully aware of what is expected, and how their presentations are graded.

They noted that I strongly emphasize the importance of using current science and quality research when researching the topics of their interest. In addition, I strongly emphasize student participation by actively listening and asking questions during their classmates' presentations; they see it as not only a way to improve student participation, but also a way to enhance interactive learning. Dr. Anding stated: "Personally, I appreciate the fact that Dr. Sun requires her students to peer review the drafts of their classmate's term papers. This allows students an opportunity to apply their evaluation and critical thinking skills, and mirrors what might be expected in the "real world" upon graduation".

While students generally enjoy NUTR/NFSC481, many students felt it was too much work for a 1 credit hour course. I initiated a review of the 481 curriculum with Ms. Valerie Balester, Assistant Provost of Undergraduate Studies. After much deliberation, the 2500 word written essay was reduced to 1250 words, and the 15-minute oral presentation was reduced to 8 minutes. I piloted the short form assignments with my class; students were very happy with the revised format. Both Drs. Anding and Johnston see it as lightening the requirements while not compromising on important learning objectives. I mentored 3 student instructors for the entire semester, and passed on the revised syllabus/materials and experience to other faculty instructors. Drs. Anding and Johnston found that the materials and experience I shared with them were very helpful. Dr. Johnston said: "I have come to learn as a course instructor, her revisions to the structure and length of the final capstone presentation and essay made the process manageable and enjoyable for both students and faculty."

They noted that I provided regular feedback and made myself accessible, and that I also seek feedback from the class and have adjusted the class structure based on student consensus. They also see these refinements as "a demonstration of active concern for the students' best interest and circumstances". Dr. Johnston noticed that I have received excellent student evaluation scores and student comments. "On a scale of 5, her evaluations have always been high (range 4.53 to 4.86), with her lowest evaluation coming in 2020 during the pandemic." They praise I use frequent engagement and discussion on research and study design concepts, and storytelling based upon my real-life relevant experiences in research and teaching. They concluded that I am an effective, enthusiastic, caring/responsive instructor, I am honored to know they see me as an asset to the Department of Nutrition and the future of nutrition education of our students.

5.8 Teaching/mentoring activities at TAMU:

Graduate Students in my lab, serving as chair of their thesis committee:

- **Da Mi Kim** (March 2016 – May 2021), **Ph.D. Student**. Awards: Korean National Scholarship (2015-2017); Nutrition and Food Science Outstanding Graduate Student Award (2015-2016)' 2nd Place of Poster Competition of Texas A&M University Nutrition Symposium (2018); 2nd Place in Hagler Fellowship (2019, declined due to project conflicts).

Da Mi has had several co-author publications, and her primary work has been sent to *JCI* and *Diabetes*.
Dissertation defense: March 18, 2021
Title: *Nutrient-sensing GHS-R in macrophage programming and meta-inflammation*

- **Daniel Villarreal** (August 2016 – June 13, 2019), **MSc. Student**. Daniel has 1 first author and 3 co-author publications.
  Thesis defense: June 13, 2019
  Title: *Pancreatic islet functions – methodological development and functional study*
  Hongying Wang, joint-training Ph.D. student*,* with Laboratory of Lipid and Glucose Metabolism, The First Affiliated Hospital of Chongqing Medical University, China. She conducted her Ph.D. coursework in China and experimental work in my lab (February 2017 – April 2019). Hongying has 1 first author and 4 co-author publications, and her primary work has been sent to *Neuron*
  Dissertation defense: May 10, 2019
  Title: *The mechanism of obesity-associated cognitive impairment*
- **Jiyeon Noh** (August 2017 – Present), **Ph.D. Student**. Awards: TAMU Excellence Scholarship (2017-2018); Symposium travel award and NFSC travel award to attend the GeroScience Symposium in Oklahoma City (2019); 3rd place of oral presentation award of Society of Chinese Bioscientists in America (SCBA-TX) Annual Symposium (2019)
- **Pengfei Ji** (August 2018 – Dec. 2021), **M.Sc. Student**
  Oral exam: Oct. 19, 2021
  Title: *Deficiency of ghrelin receptor in myeloid cells protects brain against sepsis-associated inflammation*
  Hye Won Han (August 2018 – Present), **Ph.D. Student**
- **Rece Norton** (August 2019 – May 2021), **M.Sc. Student**
  Oral exam: April 9, 2021
  Title: *Comparative review of glucose and fructose in the regulation of myeloid cells*
- **Zeyu Liu** (Feb. 2021 – Present), **Ph.D. Student**
- **Hannah Mayo** (Jan. 2021 – May, 2021), **M.Sc. Student**

Supervision of postdoctoral fellow:

Hongying Wang (March 2020 – Present)
Da Mi Kim (July 2021 - Present)

Mentoring junior faculty:

- **Dr. Chia-Shan (Jenny) Wu**, Research Assistant Professor (April 2016-present).

  Dr. Wu is trained as a neuroscientist; since joining my lab, I have helped her to further expand her expertise into metabolism and aging.

  To promote her career, I have sent her to the NIH grant workshop and new aging scholar workshop at NIH/NIA. I make all my animal models/reagents and preliminary data available to her and helped her with a number of grant applications, e.g., the AHA Career Development Award, and NIH/NIA R03. I am very pleased that she was successful in obtaining an NIH R21 and DOD grants below:

- *Ghrelin deficiency predisposes mice to aging-associated inflammation through compromised gut function and microbiota dysbiosis.*
  PI: Chia-Shan Wu
  Agency: NIH/NIA. Type: R21.
  Period: 12/01/2019 – 11/30/2021 ($238,327 directs)

- *Ghrelin signaling regulates the microbiome-gut-brain axis in inflammatory bowel disease and posttraumatic stress disorder.*
  PI: Chia-Shan Wu
  Agency: DOD-Army-Medical Research and Materiel Command
  Type: Discovery Grant
  Period: 10/01/2019 – 09/30/2021 ($200,000.00 directs)

I have also supported Dr. Wu to successfully obtain the following awards/honors:

2019 The Jackson Aging Center Pilot Project Award, Nathan Shock Center for Excellence in the Basic Biology of Aging (*I provided the diet and reagents for this pilot study*)
2019 Butler-Williams Scholar, National Institute on Aging, July 29-Aug 2, Bethesda, MD. (*I passed on the info to Dr. Wu, encouraged her to apply, and wrote her the support letter)*
2018 Travel fellowship, Annual Symposium of Gill Center for Biomolecular Science, Sep 26, Bloomington, IN. (*The organizer of the symposium is my collaborator, and I recommended Dr. Wu to present on my behalf*)

5.9 Teaching/mentoring activities at BCM:

***Class taught at BCM*:**

2010-2016 **Annual Lectures** on "Neuroendocrine Regulation of Aging", part of the "***Biology of Aging and Age-Related Diseases***" offered by the Graduate Program of Cell and Molecular Biology (the course is offered annually to graduate students and medical students).
My *lectures were well received by students, and led to several lines of collaborations with students and their mentors.*

Graduate Student training:

Thesis advisor for Ph.D. candidates:

- **Xiaojun Ma** (Jan 2010 – Nov. 2011), **joint-training Ph.D. student**. Xiaojun's work in my lab led to 4 first-author and 4 co-author publications, she now is an Associate Professor in China active in research and clinical practice.
- **Geetali Pradhan** (July 2011- April 2017), **Ph.D. student** of Translational Biology and Molecular Medicine (TBMM), Baylor College of Medicine.
  Geetali Pradhan successfully obtained a competitive student fellowship, received several conference travel awards, and graduated with an impressive publication record (3 first author and 7 co-author papers). She

now is a manager of Scientific Innovations at Force Communications, Indianapolis.
Dissertation defense: April 4, 2017
Title: *The role of growth hormone secretagogue receptor (GHs-R) in insulin section*
Dr. Pradhan now is a **Manager of Scientific Innovations** at Force Communication, in Indianapolis.

Serving as external Ph.D. thesis examiner:

- **External examiner for a Ph.D. candidate** (2008-2012): Ms. Xiaoyang Yang, Department of Physiology, University of Manitoba. Thesis title: The regulation of the human growth hormone gene through Pit-1 and Ets family members.

Serving as committee member:

- **Ayse Sena Mutlu** (2013-2018), Program of Developmental Biology, Baylor College of Medicine**.**

Clinical Fellow training:

- **Dr. Yuezhen Lin** (Nov, 2009-May, 2010), Associate Professor at Baylor College of Medicine. As a physician-scientist, she sees patients and conducts research.
- **Dr. Adelina Meadows** (May 2012- September 2014), now a practicing Pediatrician in Indiana

Junior Faculty Mentoring & Research Fellow Training:

Mentoring junior faculty:

- **Dr. Shaji Chacko**, instructor at CNRC (2011-2015), I helped Dr. Chacko with papers /grants.
- **Dr. Alli Antar**, instructor at CNRC (2012-2015), I helped Dr. Antar with papers and grants.

Training postdoctoral fellows: (include names, dates, current position)

- **Dr. Ligen Lin** (Jan. 2010-Jan. 2013), tenured Associate Professor in China. Have published several collaborative papers after Dr. Lin left the lab. Helped Dr. Lin to successfully compete for research grants from the Chinese National Science Foundation.
- **Jing Yue** (May 2011-Aug. 2012), Associate Professor & Physician Chief in China.
- **Dr. Jong Han Lee** (Oct. 2012-Jan 2016), tenure-track Assistant Professor in Korea. Have published several papers after Dr. Lee left the lab, had 2 papers published as recent as 2021.
- **Dr. Qiong Wei** (Dec. 2012-April 2014), Associate Professor & Deputy Director of Endocrinology in China. Have published several papers after Dr. Wei left the lab.
- **Dr. Odelia Bongmba** (January 2013-Aug. 2015)
  Supported by NIH training grant 1T32HD071839-01
- **Dr. Chia-Shan Wu** (April-2015-March 2016), Research Assistant Professor at TAMU

- **Dr. Preeti Kanikarla Marie** (Sept. 2015-June 2016), Postdoc fellow at M.D. Anderson

Supervision of Undergraduate Students:

- Adelina Gunawan (2002-2005), went to medical school, and later come back to do a research rotation for her pediatric endocrinology fellowship in my lab.
- Salmaan A. Jawaid (2005-2007), now a practicing physician.
- Sean Liang (Summer 2012), a SMART student from UT.

2021 Successfully hosted a student for the REU summer program for undergraduate students. Veronica Sanchez from UPR Rio Piedras (Puerto Rico) did research in my lab in summer 2021. Her work has been presented at 2 national meetings, and revied a honorand mention.

Supervision of Research Technicians*:*

- Saira Ahmed (2002-2005)
- Linda M. Hicks (2005-2007)
- Hilda G. Kennedy (2005-2007)
- Alex AG Smith (2006-2008)
- Long Jiang Shao (2007-2009), now an Instructor at Baylor College of Medicine
- Iyabo Osifeso (2008-2010)

Serving on postdoctoral mentor committees:

- Co-mentor of NIH K01 career development grant for **Dr. Kirsten Switzer**, Dept. of Immunology, Baylor College of Medicine (2008- 2009). Title of application: "Regulation of B-cell Immunity by Ghrelin".
- Postdoctoral committee for **Dr. Alejandra De Angulo Soriano**, CNRC, Baylor College of Medicine (May 2015-2017).
- Postdoctoral committee for **Dr. Wenwen Cheng**, CNRC, Baylor College of Medicine (May 2015-2018).
- Postdoctoral committee for **Dr. Elizabeth Cordonier**, CNRC, Baylor College of Medicine (Sept 2015-2018).

6. EXTENSION (N/A)

I don't have Extension-related responsibilities, but do enjoy interacting with Extension faculty members. I frequently exchange information on our topics of mutual interested such as obesity/diabetes prevention and nutrition intervention for healthy aging, and have helped with healthy aging initiatives. I have served on search committee for Extension Specialty in 2017 and 2020-2021.

---

7. SERVICE

My current appointment consists of 10% Service

7.1 Program and Impact Statement:

Nationally, I serve on grant review panels for the American Diabetes Association (ADA) and the American Federation of Aging (AFAR). I have served as *ad hoc* reviewer for 8 NIH study sections, and reviewed 20 grants for various funding agencies, including USDA AHA, and pilot grants of different universities. Several NIH scientific review officers (SRO) have commented that they were very impressed with quality of my reviews and my interactions with other reviewers. They noted that my scores had good distribution, reviews were well-written and critiques were constitutive and substantive. I am nominated to serve as standing member for NIH study section - Cell Signaling and Molecular Endocrinology Study Section (CEME) starting July 2022. I regularly contribute to journal peer reviews of various journals (reviewed near 50 papers). I currently serve on the editorial board for *World Journal of Diabetes (WJD)*, Associate Editor of *Frontiers in Immunology*|(Inflammation section), and Guest Editor of a Special Issue for *Biomolecules.* I currently hold a national leadership position as secretary of USDA Multi-state project NE1939.

Internationally, I have given many invited lectures/talks at various international meetings/symposia, and served as organizer/chairperson for a number of meetings/symposia. I have also served on thesis committees of students overseas. In my career, I have earned the respect of my peers not only because of my productivity and quality of work, but also because I have always been generous and helpful to others in sharing animal models/reagents/ideas. I have helped and supported investigators in the U.S., China, Japan, UK, Italy, The Netherlands, and Canada. Many of these collaborative works have led to high impact publications such as *JCI*, *PNAS*, *Nature Communications*, *Diabetes,* etc., as well as research grants.

At TAMU, I have contributed to the following services:

15 Department committees:

7 Standing committees: Graduate Program Committee (GPC); Committee on Undergraduate Awards; Subcommittee on Assessment (for undergraduates and graduates); Scholarships and Fellowships; Faculty advisory committee; Graduate assessment committee; Promotion and Tenure committee.

8 Special committees: Equipment committee, Search committee for Extension Specialist; *Ad Hoc* service on the Promotion Committee; Departmental Restructure committee; **Chair** of peer teaching evaluation committee (for a full professor candidate); Departmental Strategic Plan Committee; **Chair** of research committee for cluster hire of 4 tenure-track positions;
Staff search committee.

9 College/university committees:

3 Standing committees: CMP advisory panel for facility improvement; COALS Awards Committee (multiyear service); COALS Faculty Development Leave Advisory Committee 2021.

6 Special committees: 1. Search Committee for Interim Director of Institute for Advancing Health Through Agriculture; 2. Search committee for AgriLife Research Center at Dallas; 3. Borlaug Program of Requirements (POR) Committee; 4. Search Advisory Committee for Head of Department of Nutrition; 5. Borlaug Center Renovation PoR - Nutrition Office Space Focus Group; 6. Borlaug Center Renovation PoR - Nutrition Research Labs Focus Group.

Volunteering contributions: I have helped to organize departmental Research Symposia. I volunteered for poster judging of symposia and classes, contributed to Dialogs of Curriculum

Planning for Critical Thinking, Exit interview assessment, Curriculum revision task force, and Equipment purchasing and management, etc. I have also given lectures and contributed ideas for health education in the community.

Summary of impact, and personal reflection on service: I have served on national grant review panels, journal editorial boards, and as associate/guest editor or peer reviewer for many journals. I have given talks and/or acted as organizer of various international and national conferences/symposia. In my department, I have served on 13 committees, and contributed to many important initiatives of the department. I have also served on 8 college/university committees. I believe that my time and effort in service have helped to advance the missions of my department/college/university, brought great recognition for TAMU, and made a positive impact on the community at large. *I embrace service as an honor and a privilege, as well as an essential part of good citizenship. I strive to be a contributing member of my department, our university, and the community at large.*

7.2 Summary of Service Activities since joining TAMU

Time Period	Professional Societies	Editorial Boards	Other External Entities (Grant Reviewer)	University and/or Agency Committees	Departmental Committees
2015	*5 Societies:* Endocrine Society; Women in Endocrinology (WE); Society of Chinese Bioscientists in America (SCBA); American Diabetes Association (ADA); Chinese American Diabetes Association (CADA)	*2 journals:* 1. Editorial board of World Journal of Diabetes (WJD); 2. Editorial board of Inflammation and Cell Signaling (Reviewed articles for 3 journals)	*2 grant panels:* 1. Research Grant Review Committee (RGRC) for American Diabetes Association; 2. National Scientific Advisory Council of American Federation of Aging (AFAR)	BCM Graduate school admission interviewer	
2016	*6 Societies:* Endocrine Society;	*2 journals:* 1. Editorial board of WJD;	*2 grant panels:* 1. RGRC for American Diabetes Association;		*3 committees:* 1. Graduate Program Committee (GPC)-elected;

	WE; SCBA; ADA; CADA; North America Chinse Society for Nutrition (NACSN)	2. Editorial board of Inflammation and Cell Signaling; (Reviewed articles for 4 journals)	2. National Scientific Advisory Council of AFAR		2. Committee on Undergraduate Awards, Scholarships and Fellowships; 3. Subcommittee on Assessment in the department
2017	*6 Societies:* Endocrine Society; WE; SCBA; ADA; CADA; NACSN	*3 journals:* 1. Editorial board of WJD; 2. Editorial board of Inflammation and Cell Signaling; 3. Lead Guest Editor for a special issue of Journal of Nutrition & Metabolism; (Reviewed articles for 5 journals)	*2 grant panels:* 1. RGRC for American Diabetes Association; 2. National Scientific Advisory Council of AFAR	CMP advisory panel for facility improvement	*5 committees:* 1. GPC-elected; 2. Committee on Undergraduate Awards, Scholarships and Fellowships; 3. Subcommittee on Assessment in the department; 4. Search committee for Extension Specialist; 5. Major equipment purchasing and service
2018	*5 Societies:* Endocrine Society; SCBA; ADA; CADA; NACSN	*2 journals:* 1. Editorial board of WJD; 2. Editorial board of Inflammation and Cell Signaling; 3. Lead Guest Editor for a special issue of	*2 grant panels:* 1. RGRC for American Diabetes Association; 2. National Scientific Advisory Council of AFAR	CMP advisory panel for facility improvement	*6 committees:* 1. GPC-elected; 2. Committee on Undergraduate Awards, Scholarships/ Fellowships; 3.Subcommittee on Assessment; 4. Ad Hoc Promotion committee;

		Journal of Nutrition & Metabolism; (Reviewed articles for 6 journals)			5. 481 curriculum review task force; **6. Restructure committee - selected by the Dean's office**
	Since last promotion				
2019	*5 Societies:* Endocrine Society; SCBA; ADA; CADA; NACSN	*2 journals:* 1. Editorial board of WJD; 2. Editorial board of Inflammation and Cell Signaling; 3. Special issue editor for *Frontiers in immunology*, "Effect of High-Fat Diet in Inflammation". (Reviewed articles for 3 journals)	*6 grant panels:* 1. RGRC for American Diabetes Association; 2. National Scientific Advisory Council of AFAR; 3. Ad hoc Reviewer for American Heart Association; 4. Reviewer for NIH grants; 5. Grant reviewer for UT Health San Antonio; 6. Ad hoc Reviewer for NIH R15 grants.	College Of Agriculture and Life Science (COALS) Awards Committee - nominated	*6 committees:* 1. GPC-elected; 2. Committee on Undergraduate Awards, Scholarships and Fellowships; 3. Subcommittee on Assessment in the department; 4. Graduate curriculum assessment **5. Faculty advisor committee -** nominated by peers; **6. Chair of peer teaching evaluation committee for a full professor candidate.**
2020	*5 Societies:* Endocrine Society; SCBA;	*3 journals:* 1. Editorial board of WJD; 2. Editorial board of	*4 grant panels &1 leadership position with USDA:* 1. RGRC for American	1. COALS Awards Committee; 2.Search Committee	*4 committees:* 1. GPC-elected; 2. Committee on Undergraduate Awards,

	ADA; CADA; NACSN	Inflammation and Cell Signaling; 3. Review editor on the editorial board of *Frontiers in immunology* - Inflammation. (Reviewed articles for 7 journals)	Diabetes Association; 2. National Scientific Advisory Council of AFAR; 3. Ad hoc reviewer for NIH study section MCE; 4. P/F Grants of the University of Michigan. 5. Leadership position with USDA: Secretary of USDA Multi-state project NE1939 (25 scientists nationwide).	for Interim Director of Institute for Advancing Health Through Agriculture; 3. Search committee for AgriLife Research Center at Dallas.	Scholarships and Fellowships; 3. Graduate Assessment committee; 4. Strategic plan committee; 5. Search committee for Extension Specialist;
2021	*5 Societies:* Endocrine Society; SCBA; ADA; CADA; NACSN	*2 journals:* 1. Editorial board of WJD; 2. Associate Editor on the editorial board of *Frontiers in immunology* - Inflammation. 3. Gust editor of Special Issue for *Biomolecules.*	1. Leadership position with USDA: Secretary of USDA Multi-state project NE1939 (25 scientists nationwide). 2.Ad hoc reviewer for NIH member conflict special panel; 3. Reviewer for French National Research Agency generic 2021	1. COALS Awards Committee; 2.Borlaug Borlaug Program of Requirements (POR) Committee 3. Search Advisory Committee for Head of Department of Nutrition – elected or nominated 4. Focus Groups for "Institute for Advancing Health Through	*4 committees:* 1. GPC-elected; 2. Committee on Undergraduate Awards, Scholarships and Fellowships; 3. Graduate Assessment committee; 4. Search committee for Extension Specialist; **5. Chair of research committee for cluster hire of 4**

				Agriculture (IAHTA)" – Nutrition-Research labs and Offices	**tenure-track positions.**

7.3. National/International Service Contribution

7.3.1 Journal editorial boards, etc.

2009-Present **Editorial Board Member**, ***World Journal of Diabetes*** (***WJD***) (IF3.247)

2014-2020 **Editorial Board Member**, ***Inflammation and Cell Signaling***

2017-2018 **Lead Guest Editor** for ***Journal of Nutrition & Metabolism***

2019 **Special issue editor** for ***Frontiers in Immunology***, on "Effect of High- Fat Diet in Inflammation" (*Invited by Dr. Amy Field)*.

2020-Present **Review Editor**, ***Frontiers in Immunology*** - **Inflammation** (*Invited by Editor Dr. Guocang Fan)*.

2021-Present **Editorial board member**, Diabetes Research and Medicine, published by Global Science Library

2021-Present **Associate Editor** for ***Frontiers in Immunology*** - **Inflammation**
https://www.hindawi.com/publish-research/editors/editors-roles-and-responsibilities/
"With an Impact Factor of 6.429, Frontiers in Immunology is the 5th most-cited Immunology journal in the world. It is also the 1st most-cited open-access journal in Immunology."

2021- Present **Special Issue Gust editor** for **Biomolecules (IF: 4.879)**, on "Molecular Mechanisms of Obesity, Diabetes, Inflammation and Aging"
"Biomolecules is covered in the Science Citation Index Expanded (SCIE) in Web of Science and received a first Impact Factor of 4.879. The journal ranks 58/298 (Q1) in the 'BIOCHEMISTRY & MOLECULAR BIOLOGY' category."

Duties: involved in entire editorial process, such as soliciting submissions, assigning reviewers, assessing review results, making final decision, communicating with authors and journal editors etc.

Outcome: This special issue has successfully published 9 highly regarded papers in 6 months of 2021. The editorial board sees it as a popular and successful special issue, they like to convert it to a "Topic Collection" and has asked me to continue to serve as Guest Editor.

7.3.2. Review panels, etc.

Grants:

2008 Pilot & Feasibility Grant reviewer for **"**The John A. Hartford Foundation"

2010 Grant reviewer for "*Diabetes UK*"

2012 Grant reviewer "AHA innovative research groups"

2013 **Grant reviewer (Ad Hoc) for "NIH study section IPOD"** (Feb 21-22, 2013 at Bethesda, M.D.)

2013 Grant reviewer (Ad Hoc) for "AFAR's Biology of Aging Grant Programs"

2013-present **National Scientific Advisory Council of American Federation of Aging (AFAR) – annual service**

2013 Grant reviewer for Chinese National Science Foundation

2013 Grant reviewer for "Italian Ministry of Health (MOH)"

2014 **Grant reviewer (Ad Hoc) for "NIH study section IPOD"** (June 22 at Bethesda, M.D.)

2014 Grant reviewer for Chinese National Science Foundation

2014 External grant reviewer for "Michigan Diabetes Research Center (MDRC) Pilot/Feasibility Grant Program of the University of Michigan".

2015-present **Research Grant Review Committee (RGRC) for American Diabetes Association (ADA) – annual service**

2015 Served at final round grant review meeting, Oct. 2015 in Chicago

2016 Served at final round grant review meeting, Oct. 2016 in Chicago

2018 Reviewer for AFAR Postdoc program applications

2018 Reviewer for USDA/ARS grants

2018 Reviewer for ADA postdoctoral fellowship grants

2019 Reviewer for AHA Fellowships - Basic Cell: Genetics and Epigenetics (Phone conference date: Oct 9, 2019)

2019 **Reviewer for NIH Fellowships:** Behavioral Neuroscience 2020/01 ZRG1 F02A-K (20) L, October 10-11, 2019 in Washington DC.

2019 External reviewer for UT Health San Antonio limited funding on for research proposals on Low Carbohydrate and Ketogenic Diets

2019 **Reviewer for NIH Mouse Metabolic Phenotyping Center program** (*invited by Dr. Randall Friedline*).

2019 Reviewer for ADA postdoctoral fellowship grants

2019 **Reviewer for NIH R15** Neuroscience AREA Grant Applications 2020/01 ZRG1 MDCN-R (86) A**,** Oct 31 & Nov 1, 2019

2020 **Reviewer for NIH study section** - Molecular and Cellular Endocrinology (MCE) June 4 & 5

2021 **Reviewer for NIH study section -** Cell Signaling and Molecular Endocrinology Study Section (CEME), March 4-5.

2021 **Reviewer for NIH study section** - ZRG1 CB-H (02) Member Conflict: Cell Biology Special Emphasis Panel focusing on "nutrient, lipid metabolism, and inflammation in the context of aging". July 22, 11am-4pm EST.

2021 Reviewer for French National Research Agency generic 2021, grant on "Immunometabolic signature of a cardioprotective physiological aging"

2022-2028 **NIH standing study section member, Cell Signaling and Molecular Endocrinology Study Section (CSME), starting July 2022.**

7.3.4 National service/leadership

2020-2023 <u>Secretary of USDA Multi-state project NE1939</u>: *"Improving the healthspan of aging adults through diet and physical activity"* (elected to serve a 3-year term)

This multi-state project consists of 25 scientists in various universities in different states. We have regular quarterly meetings, annual symposia, and annual project reports. This is a very active group; besides making collective progress on this project, we also form different subgroups to work on new collaborative initiatives.

7.3.5 Journal review:

2007 Reviewer for "American Journal of Physiology: Endocrinology and Metabolism"
Reviewer for "Peptides"

2008 Reviewer for "World Journal of Surgical Oncology"
Reviewer for "The American Journal of Clinical Nutrition"

2009 Reviewer for "Regulatory Peptides"

2010 Reviewer for "Molecular and Cellular Endocrinology"

2011 Reviewer for "Current Diabetes Reviews"

2012 Reviewer for "PLoS ONE"
Reviewer for "Cell Biochemistry and Biophysics"
Reviewer for "Diabetes Management"
Reviewer for "Regulatory Peptides"

2013 Reviewer for "Molecular Endocrinology"
Reviewer for "Nature Communications"
Reviewer for "British Journal of Pharmacology"

2014 Reviewer for "Aging Cell"
Reviewer for "International Journal of Molecular Sciences"
Reviewer for "Gastroenterology"
Reviewer for "International Journal of Obesity"

2015 Reviewer for "AGE"
Reviewer for "Neuroscience"
Reviewer for "Trends in Endocrinol. Metab."

2016 Reviewer for "International Journal of Endocrinology"
Reviewer for "PLoS ONE"
Reviewer for "Molecular Metabolism"
Reviewer for "International Journal of Obesity"

2017 Reviewer for "Hormones and Behavior"

Reviewer for “Journal of Endocrinology”
Reviewer for “International Journal of Molecular Sciences”
Reviewer for “Diabetes”
Reviewer for “Oncotarget”

2018 Reviewer for “Diabetes”
Reviewer for “International Journal of Obesity”
Reviewer for “Diabetes”
Reviewer for “Frontiers in Immunology”
Reviewer for “Frontiers in Neuroscience”
Reviewer for “British Journal of Pharmacology”

2019 Reviewer for “Frontiers in Neuroscience & Neuropharmacology”
Reviewer for “Scientific Reports”
Reviewer for “Journal of Nutrition”

2020 Reviewer for “Journal of Gerontology”
Reviewer for “Molecular Neurobiology”
Reviewer for “Experimental Biology and Medicine”
Reviewer for “The American Journal of the Medical Sciences”
Reviewer for “Immunometabolism”
Reviewer for “Brain Behavior and Immunity”
Reviewer for “JCI insight”

2021 Reviewer for “American Journal Oof Respiratory Cell And Molecular Biology”
Reviewer for “FASEB journal”
Reviewer for “Frontiers in Immunology”

2022 Reviewer for “Journal of Translational Internal Medicine”
Reviewer for “FASEB journal”
Reviewer for “Frontiers in Immunology”

7.4 Administrative Assignments & Services at TAMU

***Departmental*:**

Regular departmental committees served:

- Graduate Program Committee (*Elected by peers*)
- Committee for Undergraduate Awards, Scholarships and Fellowships
- Subcommittee for Assessment
- Equipment committee *(Volunteered)*
- Faculty advisory committee (*Elected by peers*)
- Graduate assessment committee

Special departmental committees served:

- Search committee for Extension Specialist (2016-2017, 2020-2021): reviewing applications, phone interviews, and on-site interviews
- Departmental restructure committee (2018) - *Appointed by the Dean's office*
- **Chair of a teaching evaluation committee** for a full professor promotion (2018)
- **"Writer" of Final Departmental Promotion Report** for a faculty promotion (2018)
- Serving on Tenure and Promotion Committee (2018): 1. Writing peer teaching evaluation; 2. Being a presenter and writer; 3. participating in voting
- P&T committee for a faculty member's midterm review (2019)
- Search committee of an IT staff for the department (2019)
- Strategic plan committee (2020)
- **Chair of research committee** for cluster hire of 4 tenure-track positions for nutrition (2021): *created rubric, led the committee to review near 100 applications, conduced ~ 30 zoom interviews, coordinated on-site interviews for 7 candidates, and in charge of all communications with candidates and their references.*

Other service contributions in the department:

Key Symposium Organizer, 2016 TAMU Nutrition Obesity Research Symposium
Responsibilities: Invite speaker, design flyer, draft program, serve as correspondent for abstract submission/poster presentation, design/organize abstract book, coordinate meeting logistics (registration, IT, parking, food service, dinner reservations, etc.).

Major equipment purchasing
2016-2017: Conformal microscope, QMR body composition analyzer, and temperature-controlled cabinet for metabolic cages.
Responsibilities: survey faculty needs, obtain quotes from multiple sources, negotiate quotes, coordinate training, etc.
2018: Flow cytometer:
Responsibilities: survey faculty needs, obtain quotes from multiple sources, negotiate quotes, coordinate training, etc.

Poster judging:
- NSBA Nutrition and Food Science Annual Symposium (March 28th, 2016).
- Dr. Karen Kuben's NUTR 405 class - (April 26th, 2016 & Dec. 8th, 2016)
- Dr. Peter Murano's NUTR 489 class - (April 28th, 2017)

Extension meeting - Healthy aging community outreach, organized by Dr. Jenna Anding. Sept. 16, 2016

Curriculum planning for Critical Thinking - organized by Dr. Karen Beathard, Oct. 4, 2016

Graduate assessment - organized by Dr. Clint Allred, Dec. 13, 2016, April 28, 2017

Symposium Organizer for *2018* TAMU Diabetes Symposium on Immunometabolism and Chronic Disease.

Curriculum review of C course NUTR481 with Assistant Provost for Undergraduate Studies Ms. Valerie M. Balester. Jan. 12, 2018

Volunteered to serve on Task Force committee to revise the senior survey rubric. Met on Feb 16. March 12, 2018

Host of several speakers of NFSC Distinguished of Seminar Series (2017-2019): 1. Coordinating itinerary, including organizing a mini-grant workshop for faculty; 2. Guiding paper discussion for speaker's publications in NFSC681 the week before seminar; 3. Arranging "high-impact learning" workshops with speakers for students to gain specific technical knowledge and career advice.

Mentoring graduate instructors of NFSC481*:* In the spring semester of 2019, I mentored 3 graduate instructors (Christian Lynch, Shirley Arbizu, Hyewon Han) through the semester.

Shared lecture materials of NFSC 481 with faculty instructors who are new to the revised 481 syllabus (Dr. Karen Kubena and Karen Geismar in 2021) and Drs. David Threadgill, Bradley Johnston, Jenna Anding in 2021).

Participated in DPD Diversity and Inclusion meeting for nutrition undergraduate stundets, Jan 20th, 2022

***University/College*:**

2017-present Comparative Medicine Program **(CMP) advisory committee** for facility improvement (Representing Kleberg).

2019-present **COALS Awards Committee** (2019-2021), nominated

2020 **Search committee for AgriLife Research Center at Dallas**

2021 **Borlaug Program of Requirements (POR) Committee –** nominated
Borlaug will be renovated to house nutrition and administration for the Institute for Advancing Human Health through Agriculture (IAHTA)

2021 **Search Advisory Committee for Head of Department of Nutrition -** elected/nominated

2021 **Focus Groups for "Institute for Advancing Health Through Agriculture (IAHTA)** Nutrition: Research Labs
Nutrition: Offices

Volunteered services at Baylor College of Medicine (*not included in the summary table*):

1. Department administration, committees, etc.:

Feb. 16-17, 2009 **Poster Judge**, Huffington Center on Aging Research Symposium

May 4, 2011 **Poster Judge**, Huffington Center on Aging Distinguished Lecture and Symposium

April 11, 2012 **Poster Judge**, Huffington Center on Aging Distinguished Lecture and Symposium

March 26, 2015 **Poster Moderator**, Pediatric Research & Fellows' Symposium

2. College administration, committees, etc.:

October 2013 **Symposium oral presentation judge**, Translational Biology and Molecular Medicine (TBMM) Graduate Program, Graduate School of Biomedical Sciences

January 2014 **Graduate school admission interviewer**, TBMM Graduate Program, Graduate School of Biomedical Sciences

January 2015 **Graduate school admission interviewer**, TBMM Graduate Program, Graduate School of Biomedical Sciences

Other works in the community (*not included in the summary table*):

Communicating research results to industry:

Nov. 2006 Served as Gerson Lehrman Group council member on the topic of "Ghrelin in Diabetes".

Feb. 2008 Served as Gerson Lehrman Group council member on the topic of "Ghrelin Pathway".

Apr. 2008 Served as Gerson Lehrman Group council member on the topic of "Sirtris Pharmaceuticals' SRT501 for Type 2 diabetes".

Dec. 2012 Served as Gerson Lehrman Group council member on the topic of "Role of Ghrelin Receptor for Diabetic Gastroparesis".

Communicating research results to the general public:

May 2006 Interviewed by Baylor *"From the Lab"* news team about the work published in *Cell Metabolism*; the news article was picked up by a number of news outlets.

Aug. 2006 Invited by *"LA times"* to comment on a ghrelin-related article published on *PNAS* related to ghrelin antibody.

Feb. 2007 Endocrine News published a commentary on the publication of Endocrinology 148:1323-1329.

May 2008 Invited by *"Indianapolis Star"* to comment on a *PNAS* article on ghrelin *O*-acyl transferase (GOAT) by Eli Lilly.

April 2012 Interviewed by Baylor Office of Communication for paper published in *Aging Cell* to be featured on "Nutrition and Your Child".

International Service

2018 **Thesis examiner**, serving on thesis defenses of College of Life Science, Zhejiang University, May 23, 2018.

- Ph.D. candidate – Jin-quan Liu, *Functional and mechanistic studies of WDR74 in TGF-β signaling pathway*
- Ph.D. candidate –Yuan Bo, *Functional and mechanistic studies of PTPN3 in TGF-β signaling pathways*
- *MSc candidate – Na Zhang, LncRNA – TRL12 regulates TGF-β signaling*

2019 **Promotion External reviewer**, for promotion assessment of Dr. Ligen Lin from assistant professor to associate professor, University of Macau. Jan 2019

8. HONORS AND AWARDS

Title of Award	Name of Organization	Date Awarded	Description of what award was for	Number of the award granted annually
Award of Merit	Beijing Medical University	1982		
Research Excellence Award for Medical	Beijing Medical University	1987		One in each department
Award of Merit	Beijing Medical University	1984-1988		
Graduate Student Travel Award	University of Manitoba	1997	Faculty of Graduate Studies	
Alumni Conference Travel Award	The Alumni Association, University of Manitoba	1997	Travel Award	
Graduate Student Poster Competition	Department of Physiology, University of Manitoba	1998	1st Prize	
University of Manitoba Travel Award	Graduate Students' Association	1999	Travel Award	
Alumni Conference Travel Award	The Alumni Association, University of Manitoba	1999	Travel Award	
Graduate Student Travel Award	Faculty of Graduate Studies, University of Manitoba	1999	Travel Award	
Travel Award	Women in Endocrinology, Endocrine Society's 81st Annual Meeting in San Diego, CA	1999	Travel Award	20 recipients internationally
Apotex Fermentations Award for Excellence in Molecular Biology Research	School of Medicine, University of Manitoba	1999	Excellence in Molecular Biology Research	**Highest Research award for graduate students in the medical school, one per academic year**

Postdoctoral Fellowship	Medical Research Council of Canada (Canadian Institutes of Health Research)	2000	**3-year stipend and research travel (most prestigious national fellowship)**	
Travel Award	Endocrine Society's 85th Annual Meeting in Philadelphia, PA	2003	Travel Award	116 Awards out of 3000 submitted abstracts
Aventis Metabolism Award	Endocrine Society's 85th Annual Meeting in Philadelphia, PA	2003		10 Recipients
Travel Award	Endocrine Society 87th Annual Meeting, San Diego, CA	2005		
Rolanette and Berdon Lawrence Bone Research Award	The Bone Disease Program of Texas	2007	Finalist	
Travel Award	Endocrine Society 89th Annual Meeting, Toronto, Canada	2007		
WE Young Investigator Award sponsored by the Fat Disorders Research Society	Endocrine Society's 92nd Annual Meeting in San Diego, CA	2010		

Abstract was selected as one of the 10 "Novel & Newsworthy Top Picks" from among 1100 abstract submissions	50th Annual Meeting of American Society for Cell Biology**,** Philadelphia, PA	2010	This has also generated many news articles	
Selected attendee at NIH-sponsored 19th Annual Summer Training Course	Experimental Aging Research. June 11-16, 2011. University of Washington, Seattle, WA	2011		7 research scientists selected nationwide
Outstanding Abstract Award	Endocrine Society. Endocrine Society 94th Annual Meeting, Houston, Texas	2012	Selected for oral presentation, also selected for inclusion in the news release and the Annual Research Summaries Book (RSB)	
USDA/ARS	National Project	2013	Invited to serve as a lead scientist for USDA/ARS project "*Metabolic Effects of Ghrelin and Glucagon-Like Peptide Hormones*"	1 leader per project
Selected for oral presentation	97th Annual Meeting of the Endocrine Society. March 5 - 8, 2015. San Diego, CA	2015		
Moderated Poster Presentation	ADA Annual Meeting	2016	Abstract for selected for "*Cutting Edge—Immunobiology of Diabetes*" June 13, 2016 Work published in *Journal of Aging* and was featured on Texas A&M University AgriLife Today and other national news media outlets.	
Sponsored VIP speaker Award	Chinse Diabetes Association	2017	To represent Chinse American Diabetes Association (CADA) to	**7 Speakers were selected among more than 130 CADA members**

			present at Chinese Diabetes Association annual meeting	
Franklin Membership	London Journals Press	2018		To recognize distinctive significant publications
Neuhaus-Shepardson Teaching Grant (High Impact Learning)	College of AgriLife, TAMU	2019	**To enhance undergraduate teaching with technology**	$2,480 from College and $2000 from department
High citation recognition	Aging journal (a premier journal in the aging field)	2020	**Top 8% most cited articles of the journal**	Recognizing high citation-rate of publication
NIH standing study section member for CSME	NIH/CRS	2022-2028		Recognition of scientific credentials and quality of past study section services
Expertscape's PubMed-based algorithms: top 1% of scholars writing about Ghrelin	Recognized as an Expertscape Expert in Ghrelin *	2022		Selected worldwide based on PubMed publication over the past 10 years
2022 Dean's Outstanding Achievement Award for Service, College of Agriculture and Life Sciences	College of Agriculture and Life Sciences, TAMU (with 15 departments)	2022	This award recognizes excellence in service related activities by faculty. Successful nominees will exemplify the Aggie core value of Selfless Service and exhibit exceptional engagement and significant impact in service to the academic unit and university, the profession, and/or the society.	1 is awarded in the category of service https://agrilifetoday.tamu.edu/2022/10/13/texas-am-college-of-agriculture-and-life-sciences-bestows-honors/
2022 Texas A&M AgriLife Research Director's Awards, Faculty Fellow.=	AgriLife Research, TAMU	2022	AgriLife Research Faculty Fellows Program is to reward exceptional research faculty within the agency. Faculty Fellow designations are *permanent and* become a part of the individual's title.	2 is awarded in the entire AgriLife Research System https://agrilifetoday.tamu.edu/2023/01/11/texas-am-agrilife-research-recognizes-impact-with-directors-awards/

*https://urldefense.com/v3/__https://expertscape.com/ex/ghrelin__;!!KwNVnqRv!VWWCInCtS7DCpDVUny-dVFFR4zhU2a_JB4l3efAi7oDbZg0TWx7IuXVUb-W0UtvZoC0$

Other Accomplishment/Recognition Summary

Year	Type of Accomplishments
2006	News release for Cell Metabolism 3:379 (Ghrelin: a player in Diabetes) https://www.news-medical.net/news/2006/05/11/17919.aspx https://www.sciencedaily.com/releases/2006/05/060510091429.htm http://www.diabetesincontrol.com/ghrelin-involved-in-development-of-diabetes/ https://www.eurekalert.org/pub_releases/2006-05/bcom-gap050406.php
2010	**News release of American Society of Cell Biology:** Deleting ghrelin receptor, but not ghrelin, turns up fat-burning thermostat https://www.sciencedaily.com/releases/2010/12/101213101800.htm
2010	Work featured on USDA/ARS website https://www.ars.usda.gov/research/publications/publication/?seqNo115=264309
2015	**News release of American Diabetes Association (ADA)** https://professional.diabetes.org/rdb/ghrelin-receptor-macrophages-key-mediator-both-non-shivering-thermogenesis-brown-fat-and-adipose
2016	**AAAS New release:** AgriLife researcher takes close look at 'inflamm-aging' https://www.eurekalert.org/pub_releases/2016-08/taac-art082216.php https://www.sciencedaily.com/releases/2016/08/160823103230.htm
2016	Work featured on *Texas A&M University AgriLife Today* https://medicalxpress.com/news/2016-08-role-ghrelin-receptor-fat-tissue.html
2019	**BrightFocus Foundation News release:** A New Intervention to Control Inflammation in Alzheimer's Disease https://www.brightfocus.org/alzheimers-disease/grant/ghrelin-receptor-mediated-neuroinflammation-alzheimers-disease-0
2021	**Work featured on Texas A&M University AgriLife Today** https://agrilifetoday.tamu.edu/2021/03/16/taking-nutrition-from-personalization-to-precision/ "Hunger hormone and microbiome"
2021	**Interview with Pepsi Co**: Ghrelin signaling in immunometabolic regulation and inflamm-aging (Mar. 2, 2021)
2021	**Work featured on "Leaders in Precision Nutrition"** https://agriliferesearch.tamu.edu/21nutritionmonth/ "The Role of 'Hunger Hormone' in Inflamm-aging and Associated Chronic Diseases"
2022	One of the 2 featured speakers at Texas A&M AgriLife Institute for Advancing Health Through Agriculture (IHA) inaugural symposium: Ag solves when Aggies solve

	https://agrilifetoday.tamu.edu/2022/10/10/aggies-tout-agricultural-research-in-combating-diet-related-chronic-disease/ "Nutrient-sensing ghrelin signaling in health and disease: an immunometabolic perspective"
2023	AgriLife Today, Tweeter, Facebook about AgriLife fellow

9. OTHER/PROFESSIONAL DEVELOPMENT ACTIVITIES

9.1 Teaching Enrichment Activities Summary

Year	Type of Activity
2016	Center for Teaching Excellence (CTE)**:** Teaching Methods
2016	CTE Creating a Course Syllabus
2016	CTE Teaching Methods and Approaches to Engage Students,
2016	CTE Teaching in a digital society with Nate
2016	CTE 8 Easy Ways to Integrate Technology in Your Teaching
2016	Assessment for critical thinking organized by Karen Beathard
2016	Teaching Assessment Rubric with Jean Layne
2016	Pedagogy forum #6 - Graduate and Professional Programs
2018	Participated in curriculum review with Assistant Provost for Undergraduate Studies Ms. Valerie M. Balester to evaluate whether NUTR481 meets the "C" course criteria, contributed strategies to implement the suggested changes.
2018	"Telling Your Story Through Media" part of workshop focused on tools and techniques for effective communication
2018	Transforming Teaching & Learning Conference (April 17-18) • Plenary Keynote lecture: Life 101: Lessons from Students in the Pursuit of a Read Education (Deep Learning) by Michael Wesch • "Talk to me" table: Transforming minds – Creating thinkers rather than learners • Increasing classroom reach through peer education: I teach, you Teach • You want to teach science WHERE? Creating a distance section of a high-enrollment core science course • Student-Faculty dialog (Learn how to learn > contents) • Active learning - Leveraging technology to increase student engagement (iClicker, Blackboard) • Making Good video lectures • Oh, I took that a looooooong time ago! (make prerequisite meaningful)
2019	To improve the pedagogy of my teaching: 1. I have attended various teaching strategy workshops of Center for Teaching Excellence:

	02/08/19 Teaching with Technology Lunch Series 02/14/19 OUCH! Your Voice Makes a Difference 2. Self-studied materials to make me a better teacher: Watched "Hand Me That Monkey Wrench: Technological Tools To Teach Writing" https://www.youtube.com/watch?v=C3D0bkqYZEs&feature=youtu.be Read the "What the best colleagues teachers do", by Ken Bain.
2020	Attended the following activities to improve remote teaching effectiveness (during pandemic) and teaching pedagogy: 02/23 CTE: Just-in-Time Support for Remote Teaching 05/22 DOF: Find the fuel-Funding your scholarship 6/4, 11, 18, 25 CTE: Design Thinking for Engaged Learning 8/14 CTE: Promoting a Positive Classroom Environment: Setting the Stage Online learning: Speaking into the void: 3 active learning techniques for re-engaging your Zoom class
2021	• 2/2 CTE: Maintaining Effective Communication in Mentoring • 2/9 CTE: Facilitating Proactive Dialogue in Teaching and Learning • Online learning - How to Encourage Students to Come Prepared to Your Class • Faculty Conversation Workshop Series on "INCLUSIVE TEACHING PRACTICES IN HIGHER EDUCATION": 9/30 - Plenary Session: The Promise and Practice of Inclusive Teaching" (MSC) 10/1 Workshop #3: Inclusive Strategies for your Classroom (MSC) • CTE – on Demand for Facilitating Proactive Dialogue in Teaching and Learning: 1. Active Learning; 2. Assessment; 3. Course Design and Conceptualizations of Learning;

9.2 Research/Extension Enrichment Activities Summary

Year	Type of Activity
2016	CTEHR 2016 Annual Retreat
	Healthy Aging forum
	Yucatan Initiative by Agriculture & Life Science, Texas A&M University & CONACYT, Mexico.
2016	Food diversity initiative meeting
2016	NIH grant workshop I
2017	NIH grant workshop II
2020	USDA Multi-state research program (NE1939)
2021	Leadership (secretary) for USDA Multi-state research program (NE1939)

2021	TARCC 2021 Scientific Symposium – Advances in Alzheimer's Disease Science, Research, and Care

10. PROFESSIONAL SOCIETY INVOLVEMENT

1992-2003 Canadian Society of Biochemistry, Molecular and Cellular Biology
1995-Present Endocrine Society
1999-2017 Women in Endocrinology (WE)
2008-Present Society of Chinese Bioscientists in America (SCBA)
2008-Present American Diabetes Association (ADA)
2012-Present Chinese American Diabetes Association (CADA)
2016-Present North America Chinse Society for Nutrition (NACSN)
202- Present Academy of Cardiovascular Research Excellence (ACRE)

Candidate's Acknowledgement Statement of CV

I acknowledge that the curriculum vitae (CV) being submitted is the most current and is correct as of the date of the signature.

February 8, 2023

Yuxiang Sun, M.D., Ph.D. Date

Grants Summery Chart
(Career)

Candidate Name (Last, First):	Sun, Yuxiang
Department:	Nutrition
College:	Agriculture and Life Sciences
Rank Sought:	Professor

Type of Grant Federal/ State/Industry/ Other	External, Internal or International	Dates of the Award (list range of years for the award, e.g. 2019-2023)	Funding Agency, e.g. NSF, NIH, DoEd, USDA…	Type of Grant, e.g. R01, NSF CAREER…	Funding Agency Grant Number	Maestro Grant Number	Competitive Grant Y/N	Role: PI Co-PI Co-I	Title of Grant	Total $ Grant Amount	$ Amount Attributable to Candidate
Federal	Externa	2022-2027	NIH/NCI	R01			Y	Co-I	Obesity, body fat distribution, and breast cancer risk: is visceral fat the culprit after menopause?	$3,311,848	$59,710
Federal	Internal	2022-2026	USDA	Associate Member Research Support			N	PI	Ghrelin: a unique biomarker for nutritional state and inflamm-aging	$450,000	$450,000
Federal	Internal	2022	USDA	Multi-state			Y	PI	Improving the healthspan of aging adults through diet and physical activity	$40,000	$40,000
Other	Internal	2022-2025	Agrilife TAMU	Research Support			N	PI	Texas A&M AgriLife research support for expansion of aging-related studies	$562,500	$562,500
Federal	External	2021-2025	NIH/NIDDK	R01	DK124588-01A1	M2201171	Y	Co-I	Hepatic TGFbeta1 in Control of Type 2 Diabetes and NASH via FoxO1 Signaling	2,474,938	$104,032
Federal	Internal	2021-2022	NIH/NIEHS	Center Voucher	P30ES029067		Y	PI	Nutrient Sensing Ghrelin Receptor in BPA-Medicated	$14,959	$14,959

									Neuroinflammation and Alzheimer's Disease		
Federal	External	2021-2022	NIH/NIA	Administrative Supplement	3R01 AG064869-03S2		N	PI	Nutrient-sensing GHS-R in macrophage reprogramming and inflamm-aging	$53,025	$53,025
Federal	External	2021-2022	NIH/NIA	Administrative Supplement	**3R01 AG064869-03S1**	M2101643	Y	**PI**	Nutrient sensing ghrelin signaling - a novel pathogenic factor for Alzheimer's Disease	$378,750	**$378,750**
Other	Internal	2019-2020	Texas A&M University	T3 grant			N	PI	Targeting insulin resistance via adipose steroid interconversion in control immunometabolism	$30,000	$10,000
Federal	Internal	2019-2020	**NIH/NIEHS**	**Pilot grant**	**P30ES029067**	M2100772	Y	**PI**	Nutrient-sensing GHS-R in Bisphenol A-induced intestinal immunotoxicity	$75,000	**$75,000**
Federal	Internal	2019-2020	NIH/NIEHS	Center Voucher	P30ES029067		Y	PI	Role and Mechanism of Hunger Hormone Ghrelin Signaling in Bisphenol A-induced Immunotoxicity	$9,000	$9,000
Federal	External	2019-2023	NIH/NIDDK	R01	DK120968-01A1	M2000189	Y	Co-I	Targeting Insulin Resistance by Estrogen Receptor in Control of Type 2 Diabetes Mellitus	$1,440,932	$72,653
Federal	External	2019-2021	NIH/NIA	R56	AG063746-01	M2000950	Y	Co-I	Role of RORs in age-related circadian and metabolic alterations	$510,090	$37,500
Federal	External	2019-2022	NIH/NIDDK	R01	DK125081-01	M2002375	Y	Co-I	Crosstalk between sensory ghrelin signaling and adipose tissue	$2,104,287	$118,829
Federal	External	2019-2022	NIH/NIA	R21	R21AG061726-01A1	M2000300	Y	Co-I	Ghrelin deficiency predisposes mice to aging-associated inflammation through compromised gut function	$429,308	$5,292

									and microbiota dysbiosis		
Other	Internal	2019-2020	Texas A&M University	T3 grant			N	Co-PI	3D printing bioartificial pancreas for diabetes research	$30,000	$10,000
Other	Internal	2019-2022	Texas A&M University	X grant			Y	Co-PI	3D Printed Bio-artificial Pancreas to Treat Diabetes	$324,608	$65,408
Federal	External	2019-2023	**NIH/NIDDK**	**R01**	**DK118334-01A1**	M1902294	Y	**PI**	The role of GHS-R in macrophage reprogramming during meta-inflammation	$1,248,677	**$1,248,677**
Other	External	2019-2022	**BrightFocus Foundation**	**Research award**	**A2019630S**	M1902309	Y	**PI**	Myeloid GHS-R in neuroinflammation of Alzheimer's Disease	$300,000	**$300,000**
Federal	External	2019-2024	**NIH/NIA**	**R01**	**AG064869-01**	M1903099	Y	**PI**	Nutrient-sensing GHS-R in macrophage reprogramming and inflamm-aging	$1,548,722	**$1,548,722**
Federal	Internal	2019-2020	NIH/NIEHS	Center Voucher	P30ES029067		Y	PI	Gut hormone ghrelin - the culprit mediating immunotoxicity of Bisphenol A (BPA) in colitis?	$15,000	$15,000
Federal	External	2018-2020	**NIH/NIDDK**	**R56**	**R56 DK118334-01**		Y	**PI**	The role of GHS-R in macrophage reprogramming during meta-inflammation	$366,431	**$366,431**
The grants below are before last promotion in 2018											
Other	External	2017-2018	Oklahoma Nathan Shock Center	Nathan Shock Award			Y	PI	Protective effect of des-acyl ghrelin on muscle atrophy in aging	$13,900	$13,900
Federal	*External*	*2017-2018*	NIH/NIA	Subcontract	R01AG045828		*N*	*Contract*	*Role of clock-modulating small molecules against aging*	*$10,000*	*$10,000*

Federal	Internal	2015-2016	NIH/NIDDK	Pilot grannt	DK56338		Y	PI	The role of ghrelin receptor in dietary-induced steatohepatitis	$25,000	$25,000
Other	External	2015-2017	**American Diabetes Association**	**Basic Science Award**	**1-15-BS-177**		Y	**PI**	Ghrelin receptor in macrophages: A key mediator of both non-shivering thermogenesis in brown fat and adipose inflammation in white fat?	$345,000	**$345,000**
Other	External	2014-2016	**American Heart Association**	**Grant-in-Aid award**	**14GRNT1899001 9**		Y	**PI**	GHS-R promotes obesity and insulin resistance by regulating macrophage-mediated thermogenesis and adipose inflammation	$140,000	**$140,000**
Other	Internal	2014	Baylor College of Medicine	Bridge fund			Y	PI	The Role of Ghrelin Receptor (GHS-R) in Thermogenic Regulation	$30,000	$30,000
Federal	External	2014-2019	**USDA/ARS**	**CRIS**	**6250-51000-059**		Y	**PI**	Metabolic Effects of Ghrelin and Glucagon-Like Peptide Hormones	$550,000	**$550,000**
Other	External	2012-2013	**American Heart Association**	**National Innovative Research**	**12IRG9230004**		Y	**PI**	HFCS induces adipose inflammation and is a dietary risk factor for cardiovascular disease and stroke	$150,000	**$150,000**
Other	External	2011-2012	The Foundation for Prader-Willi Research	Research grant			Y	Co-I	Generating a novel model of ghrelin-null Prader-Willi Syndrome	$50,000	$5,000
Federal	Internal	2010-2011	Baylor College of Medicine	Pilot grannt	DK079638		Y	PI	The Role of the Ghrelin Receptor in Thermogenesis	$43,750	$43,750
Federal	External	2009-2014	**USDA/ARS**	**CRIS**	**6250-51000-055**		Y	**PI**	The role of ghrelin and its receptor in nutritional regulation of energy and glucose homeostasis	$1,000,000	**$1,000,000**

Federal	External	2007-2009	**NIH/NIA**	**R03**	**1R03 AG02 9641-01**		Y	**PI**	Ghrelin's role in glucose homeostasis during aging	$129,360	**$129,360**
Other	External	2007-2008	The John A. Hartford Foundation	Pilot grant			Y	PI	Ghrelin's role in aging-associated insulin resistance	$35,000	$35,000
Other	Internal	2006-2007	Baylor College of Medicine	Pilot grannt	DK07 9638		Y	PI	Ghrelin's Role in Type 2 Diabetes	$50,000	$50,000
									Total	**$18,292,085**	**$8,072,208**