

*Curriculum Vitae***Fu-Cheng (George) Liang**

Bolin 307G

Department of Chemistry

Midwestern State University

Wichita Falls, TX 76308-2099

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**EDUCATION/TRAINING****Post-doctoral Scholar, Biophysics/Biochemistry**, June 2017

Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, USA

Research title: Conformational Dynamics of a Membrane Protein Chaperone Enables Spatially-regulated Substrate Capture and Release

Adviser: Prof. Shu-ou Shan**Doctor of Philosophy, Medical Science (Biophysics/Biochemistry focus)**, Aug. 2011

Department of Molecular and Cellular Medicine, Texas A&amp;M Health Science Center, College Station, TX

Dissertation: Using Kinetics to Decipher the Mechanism of Protein Transport by the *Escherichia coli* Sec MachineryAdviser: Prof. Siegfried Musser**Master of Science, Chemistry (Biophysics/Biochemistry focus)**, Jun. 2002

Department of Chemistry, National Taiwan University, Taipei, Taiwan

Thesis: Glycosylation of an  $\alpha$ -Helical Hairpin Peptide: A Model System for Studying the Possible Role of Glycosylation in Signal TransductionAdviser: Prof. Sunney I. Chan**Bachelor of Science, Chemistry (Physical chemistry focus)**, Jun. 2000

Department of Chemistry, National Chung Cheng University, Chiayi, Taiwan

Adviser: Prof. Pi-Tai Chou**RESEARCH EXPERIENCES****2022-present**      **Associate Professor**, Department of Chemistry, Midwestern State University, Wichita Falls, TX 76308**2017-2022**      **Assistant Professor**, Department of Chemistry, Midwestern State University, Wichita Falls, TX 76308

1. Decipher the mechanism of protein targeting machinery in Chloroplast.
2. Directed evolution of membrane protein chaperone to ameliorate protein aggregation-associated diseases.
3. Apply membrane protein chaperone as therapeutics to prevent protein aggregation-associated diseases.

**2011-2017**      **Post-doctoral Research:** PI: Dr. Shu-ou Shan, Division of Chemistry and Chemical Engineering, California Institute of Technology, MC 147-75, Pasadena, CA 91125

1. To understand how membrane protein chaperone is regulated to capture and release of its substrate during the post-translational protein targeting.
2. To understand the structural based of molecular interactions between cpSRP43 and its substrate LHCP by using solution NMR (collaborated with Prof. Peter Wright at Scripps) complemented with mutagenesis analysis.

**2004-2011**      **Doctoral Research:** PI: Dr. Siegfried Musser, Department of Molecular and Cellular Medicine, Texas A&M Health Science Center, College Station, TX

1. Developed the fluorescence-based transport assay for the *E. Coli* Sec precursor.
2. Applied the real time fluorescence-based transport assay to study:
  - The mechanism of the Sec precursor transport through the SecYEG translocon.
  - Test the SecA insertion/deinsertion model.
  - The effects of a series of charge precursors on the transport mechanism.
3. Applied FRET technique to study the interaction between precursor and SecY.

**2002-2004**      **Research Assistant:** PI: Dr. Sunney I. Chan, Institute of Chemistry, Academia Sinica, Taiwan

A professional research assistant can independently develop leading-edge experiments for resolving biochemical phenomenon.

My responsibility covers solid phase peptide synthesis and purification, mass characterizations, NMR structural identification, and protein folding studies. Participated several projects in the collaboration with Prof. Michael Chan (Department of Chemistry, Ohio State University) to synthesize various dye-labeled peptides and with Prof. Wun Shain Fann (Department of Physics, National Taiwan University) to work on protein folding issue by using FRET

and single molecule technique.

- 2000-2002**      **Master Research:** PI: Dr. Sunney I. Chan, Department of Chemistry, National Taiwan University, Taipei, Taiwan  
Studying the effects of glycosylation and phosphorylation on the peptide conformational change and the rate of nucleation of amyloidogenesis.
- 1999-2000**      **Undergraduate Research:** PI: Dr. Pi-Tai Chou, Department of Chemistry, National Chung Cheng University, Chiayi, Taiwan  
Designed/Synthesized the organic compounds to study the excited state double proton transfer.

## **RESEARCH INTERESTS**

- Protein targeting and transport across cell membrane
- Protein folding and misfolding or amyloid formation
- Membrane protein biogenesis
- Therapeutic treatment of Alzheimer's and Parkinson's disease
- Protein structural and functional studies by NMR and fluorescence spectroscopy

## **QUALIFICATION STATEMENT**

I am a highly motivated biophysical chemist with research experiences on studying protein-protein interaction, protein folding and misfolding or aggregation, and protein targeting and translocation across cell membrane.

## **PROFESSIONAL MEMBERSHIPS**

- 2023-present**      Editorial board member of Journal of Chemistry and Interdisciplinary Research
- 2022-present**      Tenured and Associate Professor of biochemistry, Department of Chemistry, Midwestern State University
- 2022-present**      Biophysical Society member
- 2021-present**      American Society for Biochemistry and Molecular Biology
- 2020-present**      Faculty Director, Jointed Admission Medical Program (JAMP), Midwestern

- State University
- 2019** Chair of the Wichita Falls-Duncan section of the American Chemical Society (ACS), 2019
- 2018-present** Adviser of Gamma Sigma Epsilon for Chemistry honor society at Department of Chemistry, Midwestern State University
- 2018** Chair-elect of the Wichita Falls-Duncan section of the American Chemical Society (ACS), 2018
- 2017-2022** Assistant Professor of biochemistry, Department of Chemistry, Midwestern State University
- 2017-present** Associate member of Graduate Faculty, Department of Biology, Midwestern State University
- 2017-present** Faculty Adviser Tau Kappa Epsilon at Midwestern State University
- 2017-present** American Chemical Society member
- 2011-2017** Post-doctoral scholar, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA  
Adviser: Prof. Shu-ou Shan
- 2009-2015** Biophysical Society member
- 2004-2011** PhD student, Department of Molecular and Cellular Medicine, Texas A&M Health Science Center, College Station, TX  
Adviser: Prof. Siegfried Musser
- 2002-2004** Research Assistant, Institute of Chemistry, Academia Sinica,  
Adviser: Prof. Sunney I. Chan
- 2000-2002** MS student, Department of Chemistry, National Taiwan University,  
Adviser: Prof. Sunney I. Chan
- 1999-2000** Independent study in Prof. Pi-Tai Chou's lab
- 1999-2000** President, Student Association of Department of Chemistry, National Chung Cheng University

## **TEACHING EXPERIENCES**

Courses taught in Department of Chemistry, Midwestern State University

- 2024 Spring** General Chemistry (CHEM 1143)
- 2024 Spring** Online General Organic and Biological Chemistry (CHEM 1303)
- 2024 Spring** General Organic and Biological Chemistry (CHEM 1303)
- 2024 Spring** Graduated course Biochemistry II (BIOL 5253)
- 2024 Spring** Undergraduate course Biochemistry II (CHEM 4253)

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<b>2023 Fall</b>	General Chemistry (CHEM 1143)
<b>2023 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)
<b>2023 Fall</b>	Biochemistry lab (CHEM 4242)
<b>2023 Fall</b>	Graduate course Biochemistry I (CHEM 5243)
<b>2023 Fall</b>	Undergraduate course Biochemistry I (CHEM 4243)
<b>2023 Summer</b>	Online General Organic and Biological Chemistry (CHEM 1303)
<b>2023 Spring</b>	General Chemistry lab (CHEM 1141)
<b>2023 Spring</b>	General Organic and Biological Chemistry (CHEM 1303)
<b>2023 Spring</b>	Graduate course Biochemistry II (CHEM 5253)
<b>2023 Spring</b>	Undergraduate course Biochemistry II (CHEM 4253)
<b>2022 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 101
<b>2022 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 102
<b>2022 Fall</b>	Biochemistry lab (CHEM 4242)
<b>2022 Fall</b>	Graduate course Biochemistry I (CHEM 5243)
<b>2022 Fall</b>	Undergraduate course Biochemistry I (CHEM 4243)
<b>2022 Summer</b>	Online General Organic and Biological Chemistry (CHEM 1303)
<b>2022 Spring</b>	General Chemistry (CHEM 1243)
<b>2022 Spring</b>	General Organic and Biological Chemistry (CHEM 1303)
<b>2022 Spring</b>	Graduated course Biochemistry II (BIOL 5253)
<b>2022 Spring</b>	Undergraduate course Biochemistry II (CHEM 4253)
<b>2021 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 101
<b>2021 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 102
<b>2021 Fall</b>	Biochemistry lab (CHEM 4242)
<b>2021 Fall</b>	Graduate course Biochemistry I (CHEM 5243)
<b>2021 Fall</b>	Undergraduate course Biochemistry I (CHEM 4243)
<b>2021 Summer</b>	Online General Organic and Biological Chemistry (CHEM 1303)
<b>2021 Spring</b>	General Chemistry lab (CHEM 1141)
<b>2021 Spring</b>	Chemistry seminar (CHEM 4001)
<b>2021 Spring</b>	General Organic and Biological Chemistry (CHEM 1303)
<b>2021 Spring</b>	Graduated course Biochemistry II (BIOL 5253)
<b>2021 Spring</b>	Undergraduate course Biochemistry II (CHEM 4253)
<b>2020 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 101
<b>2020 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 102
<b>2020 Fall</b>	Biochemistry lab (CHEM 4242)
<b>2020 Fall</b>	Graduated course Biochemistry I (BIOL 5243)
<b>2020 Fall</b>	Undergraduate course Biochemistry I (CHEM 4243)

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<b>2020 Spring</b>	On-line General Chemistry (CHEM 1243)
<b>2020 Spring</b>	On-line General Organic and Biological Chemistry (CHEM 1303)
<b>2020 Spring</b>	On-line Graduated course Biochemistry II (BIOL 5253)
<b>2020 Spring</b>	On-line Undergraduate course Biochemistry II (CHEM 4253)
<b>2019 Fall</b>	Chemistry seminar (CHEM 4001)
<b>2019 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 101
<b>2019 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 102
<b>2019 Fall</b>	Biochemistry lab (CHEM 4242)
<b>2019 Fall</b>	Graduated course Biochemistry I (BIOL 5243)
<b>2019 Fall</b>	Undergraduate course Biochemistry I (CHEM 4243)
<b>2019 Spring</b>	General Chemistry lab (CHEM 1141)
<b>2019 Spring</b>	General Chemistry (CHEM 1243)
<b>2019 Spring</b>	General Organic and Biological Chemistry (CHEM 1303)
<b>2019 Spring</b>	Graduated course Biochemistry II (BIOL 5253)
<b>2019 Spring</b>	Undergraduate course Biochemistry II (CHEM 4253)
<b>2018 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 101
<b>2018 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)-Section 102
<b>2018 Fall</b>	Biochemistry lab (CHEM 4242)
<b>2018 Fall</b>	Graduated course Biochemistry I (BIOL 5243)
<b>2018 Fall</b>	Undergraduate course Biochemistry I (CHEM 4243)
<b>2018 Spring</b>	General Chemistry lab (CHEM 1141)
<b>2018 Spring</b>	General Chemistry (CHEM 1143)
<b>2018 Spring</b>	General Organic and Biological Chemistry (CHEM 1303)
<b>2018 Spring</b>	Graduated course Biochemistry II (BIOL 5253)
<b>2018 Spring</b>	Undergraduate course Biochemistry II (CHEM 4253)
<b>2017 Fall</b>	General Chemistry lab (CHEM 1241)
<b>2017 Fall</b>	General Organic and Biological Chemistry (CHEM 1303)
<b>2017 Fall</b>	Biochemistry lab (CHEM 4242)
<b>2017 Fall</b>	Graduated course Biochemistry I (BIOL 5243)
<b>2017 Fall</b>	Undergraduate course Biochemistry I (CHEM 4243)

## **RESEARCH MENTORING EXPERIENCES**

<b>2023-Fall</b>	Mentoring EURECA students, Abigail Guinan, entitled “Using Membrane Protein Chaperone to Disrupt the Alpha-Synuclein Protein Aggregation: A Potential Treatment for Parkinson Disease”, Department of Chemistry,
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- Midwestern State University
- 2023-Fall** Mentoring Welch scholars, Connor Mitchell, Andrew Vann, Kara Rodgers and Isabella Makelaar, Department of Chemistry, Midwestern State University
- 2023-Summer** Mentoring Welch scholars, Connor Mitchell, Andrew Vann, Kara Rodgers and Isabella Makelaar, Department of Chemistry, Midwestern State University
- 2023-Summer** Mentoring UGROW students, Abigail Matthew, entitled “Membrane Protein Chaperone Prevents and Disrupts Alpha-Synuclein Protein Aggregation: A Potential Treatment for Parkinson’s disease”, Department of Chemistry, Midwestern State University
- 2023-Spring** Mentoring Welch scholars, Connor Mitchell, Andrew Vann, Hunter Ordner, Kara Rodgers and Isabella Makelaar, Department of Chemistry, Midwestern State University
- 2023-Spring** Mentoring High School student, Chaitanya Reddy, Department of Chemistry, Midwestern State University
- 2023-Spring** Mentoring EURECA students, Abigail Guinan, entitled “Using Membrane Protein Chaperone to Prevent and Disrupt the Alpha-Synuclein Protein Aggregation in Parkinson Disease” Department of Chemistry, Midwestern State University
- 2023-Spring** Mentoring EURECA students, Abigail Matthew, entitled “Using Membrane Protein Chaperone to Prevent Familial Mutant of Alpha-Synuclein Protein Aggregation in Parkinson Disease”, Department of Chemistry, Midwestern State University
- 2022-Fall** Mentoring Welch scholar, Connor Mitchell, Andrew Vann, Hunter Ordner, Kara Rodgers and Isabella Makelaar, Department of Chemistry, Midwestern State University
- 2022-Fall** Mentoring Biology student, Abigail Guinan, Department of Chemistry, Midwestern State University
- 2022-Fall** Mentoring High School student, Chaitanya Reddy, Department of Chemistry, Midwestern State University
- 2022-Fall** Mentoring EURECA students, Abigail Matthew, entitled “Using Membrane Protein Chaperone to Prevent Familial Mutant of Alpha-Synuclein Protein Aggregation in Parkinson Disease”, Department of Chemistry, Midwestern State University
- 2022-Summer** Mentoring Welch scholar, Connor Mitchell, Hunter Ordner, Kara Rodgers and Isabella Makelaar, Department of Chemistry, Midwestern State University
- 2022-Spring** Mentoring Welch scholar, Connor Mitchell, Hunter Ordner, Sebastian Chavira

- and Kara Rodgers and Isabella Makelaar, Department of Chemistry, Midwestern State University
- 2022-present** Mentoring Computer Science graduate student, Leslie Cook, Department of Chemistry, Midwestern State University
- 2022-Spring** Mentoring Biology senior student, Viviana James, Brett Mitchell and Justlyn Ferrol, Department of Chemistry, Midwestern State University
- 2021-Fall** Mentoring Welch scholar, Connor Mitchell and Hunter Ordner, Department of Chemistry, Midwestern State University
- 2021-Fall** Mentoring Post-baccalaureate student, Porscha Weaver, Dirgha Vora and Leslie Cook, Department of Chemistry, Midwestern State University
- 2021-Summer** Mentoring Welch scholar, Connor Mitchell, Department of Chemistry, Midwestern State University
- 2021-Summer** Mentoring Post-baccalaureate student, Leah Slade, Ryan Smith, Porscha Weaver and Dirgha Vora, Department of Chemistry, Midwestern State University
- 2021-Spring** Mentoring Welch scholars, Leah Slade and Hunter Ordner, Department of Chemistry, Midwestern State University
- 2021-Spring** Mentoring Senior students, Porscha Weaver and Dirgha Vora, entitled “Using Membrane Protein Chaperone to Rescue the Phenotype in a Fly Model of Parkinson’s disease”, Department of Chemistry, Midwestern State University
- 2021-Spring** Mentoring Senior students, Ryan Smith, entitled “Utilizing Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation”, Department of Chemistry, Midwestern State University
- 2021-Spring** Mentoring EURECA students, Christopher Sun, entitled “Applying Membrane Protein Chaperone as Therapeutics to Prevent Amyloid Beta Aggregation”, Department of Chemistry, Midwestern State University
- 2020-Fall** Mentoring EURECA students, Christopher Sun, entitled “Applying Membrane Protein Chaperone as Therapeutics to Prevent Amyloid Beta Aggregation”, Department of Chemistry, Midwestern State University
- 2020-Fall** Mentoring EURECA students, Porscha Weaver and Dirgha Vora, entitled “Using Membrane Protein Chaperone to Rescue the Phenotype in a Fly Model of Parkinson’s disease”, Department of Chemistry, Midwestern State University
- 2020-Fall** Mentoring EURECA students, Dianna Daniel and Ryan Smith, entitled “Utilizing Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation”, Department of Chemistry, Midwestern State University



- 2020-Fall** Mentoring Welch scholars, Leah Slade and Hunter Ordner, Department of Chemistry, Midwestern State University
- 2020-Fall** Mentoring Welch scholars, Chaniqua Moses and Ajani Thomas, entitled “Synthesis of Effective Drug to Inhibit Amyloid Beta Aggregation”, Department of Chemistry, Midwestern State University
- 2020-July** Mentoring UGROW students, Blanca Turner and Dianna Daniel, entitled ” Utilizing Membrane Protein Chaperone to Prevent Amyloid Plaques and Neurofibrillary Tangle Formation in Alzheimer’s Disease”, Department of Chemistry, Midwestern State University
- 2020-Spring** Mentoring EURECA students, Dianna Daniel and Ryan Smith, entitled “Utilizing Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation”, Department of Chemistry, Midwestern State University
- 2020-Spring** Mentoring EURECA students, Porscha Weaver and Dirgha Vora, entitled “Using Membrane Protein Chaperone to Rescue the Phenotype in a Fly Model of Parkinson’s disease”, Department of Chemistry, Midwestern State University
- 2019-present** Mentoring graduate students, James Denton, entitled “Utilization of Amber Suppression to Determine the Substrate Binding Sites on Membrane Protein Chaperone”, Department of Chemistry/Biology, Midwestern State University
- 2019-Fall** Mentoring EURECA students, Dianna Daniel, entitled “Utilize Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation”, Department of Chemistry, Midwestern State University
- 2019-Fall** Mentoring EURECA students, Prisca Mbonu, entitled “Directed Evolution of Membrane Protein Chaperone to Ameliorate Protein Aggregation-Associated Diseases”, Department of Chemistry, Midwestern State University
- 2019-July** Mentoring UGROW students, Prisca Mbonu, Christopher Sun, Dolly Mombayarara, and Cheslin Maloney, entitled ”Apply Membrane Protein Chaperone as Therapeutics to Prevent Protein Aggregation Associated Diseases”, Department of Chemistry, Midwestern State University
- 2019-Spring** Mentoring EURECA students, Prisca Mbonu, entitled “Directed Evolution of Membrane Protein Chaperone to Ameliorate Protein Aggregation-Associated Diseases”, Department of Chemistry, Midwestern State University
- 2018-July** Mentoring UGROW students, Kameron Shrum and Tyler Jones, entitled ” Decipher the Mechanism of Protein Targeting Machinery in Chloroplast” Department of Chemistry, Midwestern State University
- 2017-2018** Mentoring Welch scholars, Maddison Allison, Kameron Shrum, James Denton,

	Danielle Dowe, Teri Douglas, Shermali Ratnasinghe and Matthew Mitchell Department of Chemistry, Midwestern State University
<b>2016-2017</b>	Coaching 2016 Science Olympiad in Field elementary school, Pasadena, California
<b>2016-2017</b>	Mentoring SURF undergraduate and exchange students, Wen-Hua Lee and XiangXinyao, in Division of Chemistry and Chemical Engineering, California Institute of Technology
<b>2014-2015</b>	Mentoring high school students, Chris Chi, on protein NMR assignment in Division of Chemistry and Chemical Engineering, California Institute of Technology
<b>2013-2014</b>	Mentoring SURF undergraduate students, Samantha Piskiewicz, in Division of Chemistry and Chemical Engineering, California Institute of Technology
<b>2010-2011</b>	Mentoring research assistant, Anita Pokharel, in Department of Molecular and Cellular Medicine, Texas A&M Health Science Center
<b>2001-2002</b>	Mentoring master student, Lily Y-L Lee, in Institute of Chemistry, Academia Sinica
<b>2000-2001</b>	Teaching Assistant of the course “General Chemistry Laboratory” with science teacher, She, Jui-Lin, in Department of Chemistry, National Taiwan University

## **GRANT WRITING AND ACQUISITION**

- 2023 NIH S10 proposal entitled: Advanced Microscopy Station: Epifluorescence, Total Internal Reflection Fluorescence, Differential Interference Contrast.
- 2023 NIH R16 proposal entitled: Utilizing Membrane Protein Chaperone as Therapeutics to Prevent Protein Aggregation-Associated Disease.
- 2023 Welch Research grant entitled: Utilizing Membrane Protein Chaperone to Prevent and Disrupt Protein Aggregation.
- 2022 Co-PI for Jean Dreyfus Lectureship for Undergraduate Institutions
- 2022 NIH R16 proposal entitled: Utilizing Membrane Protein Chaperone as Therapeutics to Prevent Protein Aggregation-Associated Disease.
- 2021 NIH R15 proposal entitled: Utilizing Membrane Protein Chaperone and Chemical Chaperone as Therapeutics to Prevent Protein Aggregation-Associated Disease.
- 2020 NSF MRI proposal entitled: Acquisition of an 80 MHz NMR to enhance undergraduate and faculty research at Midwestern State University.

- 2019 NSF MRI proposal entitled: Acquisition of a 80 MHz NMR to enhance undergraduate and faculty research at Midwestern State University.
- 2019 NSF CAREER proposal entitled: Characterize and Apply Novel Membrane Protein Chaperone to Prevent Protein Aggregation in Vitro.
- 2018 NSF MRI proposal entitled: Acquisition of a 500 MHz NMR to enhance undergraduate and faculty research at Midwestern State University

## **RESEARCH GRANT**

### **MSU Undergraduate Student Research Funding**

- 2024 Spring, Award EURECA project with student, **Fu-Cheng Liang** and Abigail Guinan, entitled “Using Membrane Protein Chaperone to Disrupt the Alpha-Synuclein Protein Aggregation: A Potential Treatment for Parkinson Disease”, Department of Chemistry, Midwestern State University
- 2023 Fall, Award EURECA project with student, **Fu-Cheng Liang** and Abigail Guinan, entitled “Using Membrane Protein Chaperone to Disrupt the Alpha-Synuclein Protein Aggregation: A Potential Treatment for Parkinson Disease”, Department of Chemistry, Midwestern State University
- 2023 Award UGROW project with student, **Fu-Cheng Liang** and Abigail Matthew, entitled “Membrane Protein Chaperone Prevents and Disrupts Alpha-Synuclein Protein Aggregation: A Potential Treatment for Parkinson’s disease”, Department of Chemistry, Midwestern State University
- 2023 Spring, Award EURECA project with student, **Fu-Cheng Liang** and Abigail Guinan, entitled “Using Membrane Protein Chaperone to Prevent and Disrupt the Alpha-Synuclein Protein Aggregation in Parkinson Disease”, Department of Chemistry, Midwestern State University
- 2022 Fall and 2023 Spring, Award EURECA project with student, **Fu-Cheng Liang** and Abigail Matthew, entitled “Using Membrane Protein Chaperone to Prevent Familial Mutant of Alpha-Synuclein Protein Aggregation in Parkinson Disease”, Department of Chemistry, Midwestern State University
- 2020 Fall and 2021 Spring, Award EURECA project with student, **Fu-Cheng Liang**, and Christopher Sun, entitled “Applying Membrane Protein Chaperone as Therapeutics to Prevent Amyloid Beta Aggregation”, Department of Chemistry, Midwestern State University
- 2020 Award UGROW project with students, **Fu-Cheng Liang**, Blanca Turner and Dianna Daniel, entitled “Utilizing Membrane Protein Chaperone to Prevent Amyloid Plaques and

Neurofibrillary Tangle Formation in Alzheimer's Disease", Department of Chemistry, Midwestern State University

- 2019 Fall to 2020 Fall, Award EURECA project with students, **Fu-Cheng Liang**, Dianna Daniel and Ryan Smith, entitled "Utilizing Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation", Department of Chemistry, Midwestern State University
- 2020 Spring and 2020 Fall, Award EURECA project with students, **Fu-Cheng Liang**, Porscha Weaver and Dirgha Vora, entitled "Using Membrane Protein Chaperone to Rescue the Phenotype in a Fly Model of Parkinson's disease", Department of Chemistry, Midwestern State University
- 2019 Spring and 2019 Fall, Award EURECA project with student, **Fu-Cheng Liang** and Prisca Mbonu, entitled "Directed Evolution of Membrane Protein Chaperone to Ameliorate Protein Aggregation-Associated Diseases", Department of Chemistry, Midwestern State University
- 2019 Award UGROW project with students, **Fu-Cheng Liang**, Prisca Mbonu, Christopher Sun, Dolly Mombeyara, and Cheslin Maloney, entitled "Apply Membrane Protein Chaperone as Therapeutics to Prevent Protein Aggregation Associated Diseases", Department of Chemistry, Midwestern State University
- 2018 Award UGROW project with students, **Fu-Cheng Liang**, Kameron Shrum and Tyler Jones, entitled "Decipher the Mechanism of Protein Targeting Machinery in Chloroplast" Department of Chemistry, Midwestern State University

### **Research and Development Funding**

- Award 2023 Robert A. Welch Equipment grant (Grant No: Q-AO-0007-20230405) with a total amount of \$75,000 for one year as a co-Principal Investigator. This grant is intended to improve a department's capabilities in chemical research and to give faculty and students a richer laboratory experience.
- Award Robert A. Welch departmental research fund (ID# AO-0001) with a total amount of \$40,000 during 2020 – 2023 as a co-Principal Investigator. This grant is used to support chemistry faculty's research as well as provide scholarship for chemistry students to sponsor their undergraduate research program at MSU.
- Award 2023 American Chemical Society (ACS) Summer Experiences for the Economically Disadvantaged (SEED) grant with a total amount of \$3200 as a co-Principal Investigator. Project SEED gives grants to ACS certified institutions and industry who are able to recruit high school students to do summer research in chemistry. Project entitles

“Biophysical and Biochemical Characterization of a Familial Mutant Protein in Parkinson Disease”.

- Award 2022 Intramural Proposal Development Grants program from MSU’s Office of Sponsored Programs and Research. This grant is used to prepare the grant proposal and submit to an external funding agency.
- Award Texas Legislature-funded JAMP undergraduate school to support students to apply for medical school and provide the guidance to apply for the JAMP.
- Award 2017 MCOSM internal research funding for the proposal entitled “Protein Targeting in Chloroplast”.
- Award 2017 MCOSME startup funding \$10,000 per year for three years

## **HONOR AND TRAINING PROGRAM**

<b>2020-2021</b>	Faculty member of the year, Student Government Association, Midwestern State University
<b>2021</b>	First place in poster presentation with students, Christopher Sun, George Liang, Undergraduate Research and Creative Activity Forum, Midwestern State University
<b>2020</b>	Tri-Beta Professor of Month, Midwestern State University
<b>2020</b>	MCOSME faculty research award, Midwestern State University
<b>2019</b>	First place in poster presentation with students, Shermali Ratnasinghe, George Liang, Undergraduate Research and Creative Activity Forum, Midwestern State University
<b>2019</b>	Second place in poster presentation with students, Dianna Daniel, 13 <sup>th</sup> Undergraduate Research and Creative Activity Forum, Midwestern State University
<b>2019</b>	First place in oral presentation with students, Prisca Mbonu, Christopher Sun, at 2019 UGROW Symposium, Midwestern State University
<b>2018</b>	First place in poster presentation with students, Kameron Shrum and Tyler Jones, at 11 <sup>th</sup> Undergraduate Research and Creative Activity Forum, Midwestern State University
<b>2015</b>	2015 Biophysical Society Educational Committee Travel Award
<b>2004-2011</b>	Research Assistantship for participating in NIH project
<b>2007/04</b>	Awarded “Junior Category 2 <sup>nd</sup> Placement for Poster Presentation” by 12 <sup>th</sup> Annual Student Research Symposium in College of Medicine Texas A&M Health Science Center

- 2003/03** Awarded Travel Fellowship provided by "Glycoscience Research Education Foundation", and amount: NT30000
- 2002/06** Awarded "Master Thesis Excellent Poster Presentation" by Department of Chemistry, National Taiwan University
- 2000/09** Award "Ministry of Education Scholarship for Graduate Students" by Department of Chemistry, National Taiwan University for two years
- 2000/09** Traineeships for participating in Academia Sinica program project "Carbohydrate Chemistry and Biochemistry of Glycoconjugates"
- 2000/07** Participated in "Biotechnology Core Techniques" in National Taiwan University
- 1999/09** Traineeships for participating in National Science Council undergraduate student's research project "Excited state double proton transfer"
- 1999/07** Ranked first in the class of 45 students; therefore, has been awarded "THE PRESIDENT'S AWARD" by the National Chung Cheng University via the recommendation of the Department of Chemistry and Administration, and amount: NT30000

## **PUBLICATIONS**

1. Christopher Sun, Leah Slade, Prisca Mbonu, Hunter Ordner, Connor Mitchell, Matthew Mitchell and **Fu-Cheng Liang**, (2024) *The FEBS Journal*, **291**, 158-176, "Membrane Protein Chaperone and Sodium Chloride Modulate the Kinetics and Morphology of Amyloid Beta Aggregation" ***Impact Factor = 5.6***
2. Alex Siegel, Camille Z. McAvoy, Vinh Lam, **Fu-Cheng Liang**, Gerard Kroon, Emily Miaou, Patrick Griffin, Peter E. Wright, Shu-ou Shan (2020) *Journal of Molecular Biology*, **432**, 166708, "A Disorder-to-Order Transition Activates an ATP-Independent Membrane Protein Chaperone." ***Impact Factor = 5.4; Citation = 6***
3. Peng Wang, **Fu-Cheng Liang**, Daniel Wittmann, Alex Siegel, Shu-ou Shan, and Bernhard Grimm (2018) *Proceedings of the National Academy of Sciences of the United States of America*, **115**, E3588-E3596, "Chloroplast SRP43 Acts as a Chaperone for Glutamyl-tRNA Reductase, the Rate-limiting Enzyme in Tetrapyrrole Biosynthesis." ***Impact Factor = 11.2; Citation = 48***
4. **Fu-Cheng Liang**, Gerard J. Kroon, Camille McAvoy, Chris Chi, Peter Wright and Shu-ou Shan, (2016) *Proceedings of the National Academy of Sciences of the United States of America*, **113(12)**, E1615-E1624 "Conformational Dynamics of a Membrane Protein

- Chaperone Enables Spatially-regulated Substrate Capture and Release.” *Impact Factor* = **11.2**; *Citation* = **41**
5. Peera Jaru-Ampornpan, **Fu-Cheng Liang**, Alex Nisthal, Thang X. Nguyen, Steven Mayo, and Shu-ou Shan (2013) *The Journal of Biological Chemistry*, **288**, 13431-13445 “Mechanism of an ATP-independent Protein Disaggregase: II. Distinct Molecular Interactions Drive Multiple Steps during Aggregate Disassembly.” *Impact Factor* = **5.1**; *Citation* = **25**
  6. **Fu-Cheng Liang**, Umesh K. Bageshwar and Siegfried M. Musser (2012) *The Journal of Biological Chemistry*, **287**, 12703-12714 “Position-dependent Effects of Polylysine on Sec Protein Transport.” *Impact Factor* = **5.1**; *Citation* = **13**
  7. **Fu-Cheng Liang**, Umesh K. Bageshwar and Siegfried M. Musser (2009) *Molecular Biology of the Cell*, **20**, 4256-4266 “Bacterial Sec Protein Transport is Rate-Limited by Precursor Length: A Single Turnover Study.” *Impact Factor* = **3.7**; *Citation* = **28**
  8. Umesh K. Bageshwar, Neal Whitaker, **Fu-Cheng Liang** and Siegfried M. Musser (2009) *Molecular Microbiology*, **74(1)**, 209-226 “Interconvertibility of Lipid- and Translocon-Bound Forms of the Bacterial Tat Precursor pre-Sufl.” *Impact Factor* = **3.8**; *Citation* = **65**
  9. Marianne M. Lee, Clara E. Isaza, James D. White, Rita P.-Y. Chen, **George F.-C. Liang**, Hannah T.-F. He, Sunney I. Chan, Michael K. Chan (2009) *Proteins: Structure, Function, and Bioinformatics*, **77(3)**, 647-657 “Insight into the Substrate Length Restriction of M32 Carboxypeptidases: Characterization of Two Distinct Subfamilies.” *Impact Factor* = **3.7**; *Citation* = **21**
  10. Rita P.-Y. Chen, **Fu-Cheng Liang**, Chung-Tien Lee, Rosa Zerella and Sunney I. Chan (2008) *Journal of the Chinese Chemical Society* **55(4)**, 772-781 “Contributions of a Surface Hydrophobic Cluster to the Folding and Structural Stability of Ubiquitin.” *Impact Factor* = **1.5**; *Citation* = **0**
  11. Clara E. Isaza, Xuejun Zhong, Lucia E. Rosas, James D. White, Rita P.-Y. Chen, **George F.-C. Liang**, Sunney I. Chan, Abhay R. Satoskar and Michael K. Chan (2008) *Biochem Biophys Res Commun.* **373(1)**, 25-29 “A Proposed role for Leishmania major Carboxypeptidase in Peptide Catabolism.” *Impact Factor* = **3.5**; *Citation* = **22**
  12. **Fu-Cheng Liang**, Rita P.-Y. Chen, Chun-Cheng Lin, Kuo-Ting Huang and Sunney I. Chan (2006) *Biochem Biophys Res Commun.* **342(2)**, 482-488 “Tuning the Conformation Properties of a Peptide by Glycosylation and Phosphorylation.” *Impact Factor* = **3.5**; *Citation* = **41**

## MANUSCRIPTS IN PREPARATION

13. Fu-Cheng Liang, Kameron Shrum and Tyler Jones, “LTD Does Not Function as Membrane Protein Chaperone During Protein Targeting in Chloroplast”
14. Fu-Cheng Liang, Dianna Daniel and Ryan Smith, “Utilizing Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation”

## CONFERENCES ABSTRACT

1. Kameron Lee Shrum, **Fu-Cheng Liang** (2020) 259th ACS National Meeting & Exposition, Philadelphia, PA, United States, CHED-0592. “LTD does not function as a membrane protein chaperone during protein targeting in the chloroplast.”
2. Matthew Glen Mitchell, **Fu-Cheng Liang** (2020) 259th ACS National Meeting & Exposition, Philadelphia, PA, United States, CHED-0521. “Applying membrane protein chaperone as therapeutics to prevent Alzheimer's disease.”
3. Camille McAvoy, **Fu-Cheng Liang**, Emily Miaou, and Shu-ou Shan (2017) *Protein Science*, **26** (S1). pp. 29-30. ISSN 0961-8368. “Dynamics of Membrane Protein-Chaperone Interaction.”
4. **Fu-Cheng Liang**, Camille McAvoy, Samantha Piskiewicz, Gerard J. Kroon, Maria Yamout, Peter Wright and Shu-ou Shan, (2015) *Biophysical Journal*, **108**, 53A “inter-domain Dynamics of a Novel Chaperone Enables Effective Capture of Membrane Protein Substrates.”
5. **Fu-Cheng Liang**, Umesh K. Bageshwar and Siegfried M. Musser (2012) *Biophysical Journal*, **102**, 106A “Position-dependent Effects of Polylysine on Sec Protein Transport.”

## PRESENTATIONS and CONFERENCES

1. Kara Rodgers and Fu-Cheng Liang (2023) **Poster presentation**, American Chemical Society (ACS) Southwest Regional Meeting (SWRM), “Membrane Protein Chaperone Modulates the Kinetics and Morphology of Tau Aggregation: A Potential Treatment for Alzheimer’s disease”
2. Andrew Vann and Fu-Cheng Liang (2023) **Poster presentation**, American Chemical Society (ACS) Southwest Regional Meeting (SWRM), “Leveraging membrane protein chaperones to mitigate familial mutant amyloid beta aggregation: Prospective therapeutic approach for early-onset Alzheimer's disease”



3. Isabella Makelaar and Fu-Cheng Liang (2023) **Poster presentation**, American Chemical Society (ACS) Southwest Regional Meeting (SWRM), “Utilizing membrane protein chaperone to prevent and disrupt alpha synuclein protein aggregation in Parkinson disease”
4. George Liang (2023) **Oral Presentation**, UGROW workshop at Midwestern State University, “Principle and Hands-on Operations of Fluorescence Spectroscopy”
5. Abigail Matthew and Fu-Cheng Liang (2023) **Oral Presentation**, 18th Annual UGROW Symposium at Midwestern State University, “Membrane Protein Chaperone Prevents and Disrupts Alpha-Synuclein Protein Aggregation: A Potential Treatment For Parkinson’s disease”
6. Hunter Ordner, Chris Sun, Connor Mitchell, Matthew Mitchell, and Fu-Cheng Liang (2023) **Poster Presentation**, 67<sup>th</sup> Biophysical Society Annual Meeting in San Diego “Membrane Protein Chaperone Affects the Kinetics and Morphology of Amyloid Beta Aggregation”
7. Kara Rodgers and Fu-Cheng Liang (2023) **Poster presentation**, MSU 20<sup>th</sup> Undergraduate Research & Creative Activity forum “Membrane Protein Chaperone Modulates the Kinetics and Morphology of Tau Aggregation: A Potential Treatment for Alzheimer’s disease”
8. Abigail Guinan and Fu-Cheng Liang (2023) **Poster presentation**, MSU 20<sup>th</sup> Undergraduate Research & Creative Activity forum “Using Membrane Protein Chaperone to Prevent Familial Mutant of Alpha-Synuclein Protein Aggregation in Parkinson Disease”
9. Abigail Matthew and Fu-Cheng Liang (2023) **Oral presentation**, MSU 20<sup>th</sup> Undergraduate Research & Creative Activity forum “Using Membrane Protein Chaperone to Prevent Familial Mutant of Alpha-Synuclein Protein Aggregation in Parkinson Disease”
10. Abigail Matthew, Abigail Guinan and Fu-Cheng Liang (2022) **Poster presentation**, MSU 19<sup>th</sup> Undergraduate Research & Creative Activity forum “Using Membrane Protein Chaperone to Prevent Familial Mutant of Alpha-Synuclein Protein Aggregation in Parkinson Disease”
11. Connor Mitchell, and Fu-Cheng Liang (2022) **Poster Presentation**, MSU 19<sup>th</sup> Undergraduate Research & Creative Activity forum “Membrane Protein Chaperone Affects the Kinetics and Morphology of Amyloid Beta Aggregation”
12. Hunter Ordner, Chris Sun, Connor Mitchell, Matthew Mitchell, and Fu-Cheng Liang (2022) **Poster Presentation**, MSU celebration of scholarship “Membrane Protein Chaperone Affects the Kinetics and Morphology of Amyloid Beta Aggregation”
13. Viviana James, Leslie Cook, Isabella Makelaar, and Fu-Cheng Liang (2022) **Poster presentation**, MSU celebration of scholarship “Biophysical and Biochemical Characterization of a Familial Mutant of Alpha-Synuclein Protein in Parkinson Disease”

14. Hunter Ordner, Chris Sun, Connor Mitchell, Matthew Mitchell, George Liang (2022), **Poster Presentation**, 15th Annual Honors Program Symposium, “Membrane Protein Chaperone Affects the Kinetics and Morphology of Amyloid Beta Aggregation”
15. Hunter Ordner, Chris Sun, Connor Mitchell, Matthew Mitchell, and Fu-Cheng Liang (2022) **Poster Presentation**, Great Plains Honors Conference “Membrane Protein Chaperone Affects the Kinetics and Morphology of Amyloid Beta Aggregation”
16. Christopher Sun and Fu-Cheng Liang (2021) **Poster Presentation**, Midwest Regional Undergraduate Research, Scholarly and Creative Activity Conference “Applying Membrane Protein Chaperone as Therapeutics to Prevent Amyloid Beta Aggregation”
17. Christopher Sun and Fu-Cheng Liang (2021) **Poster Presentation**, National Conference on Undergraduate Research at home “Applying Membrane Protein Chaperone as Therapeutics to Prevent Amyloid Beta Aggregation”
18. Christopher Sun and Fu-Cheng Liang (2021) **Poster Presentation**, Virtual UGRCAF at Midwestern State University “Applying Membrane Protein Chaperone as Therapeutics to Prevent Amyloid Beta Aggregation”
19. Leah Slade and Fu-Cheng Liang (2020) **Poster Presentation**, Virtual UGRCAF at Midwestern State University “Concentration of Sodium Chloride Determines the Aggregation Kinetics and Morphology of Amyloid Beta”
20. Christopher Sun and Fu-Cheng Liang (2020) **Poster Presentation**, Virtual UGRCAF at Midwestern State University “Applying Membrane Protein Chaperone as Therapeutics to Prevent Amyloid Beta Aggregation”
21. Dianna Daniel, Blanca Turner, and George Liang (2020) **Oral Presentation**, UGROW Symposium at Midwestern State University ” Utilizing Membrane Protein Chaperone to Prevent Amyloid Plaques and Neurofibrillary Tangle Formation in Alzheimer’s Disease”
22. George Liang (2020) **Oral Presentation**, UGROW workshop at Midwestern State University “ Principles of Fluorescence Spectroscopy and Protein Purification”
23. Shermali Ratnasinghe and George Liang (2020) **Poster Presentation**, Abilene Christian University virtual undergraduate research festival ”Identification of Membrane Protein Chaperone as Therapeutics to Prevent Protein Aggregation of Alzheimer’s disease”
24. Dianna Daniel, Ryan Smith and George Liang (2020) **Poster Presentation**, Virtual UGRCAF at Midwestern State University ”Utilize Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation”
25. Dirgha Vora, Porscha Weaver, George Liang and Jon Scales (2020) **Poster Presentation**, Virtual UGRCAF at Midwestern State University ”Using Membrane Protein Chaperone to Rescue the Phenotype in a Fly model of Parkinson’s disease”

26. Prisca Mbonu, Christopher Sun and Fu-Cheng Liang (2020) **Oral Presentation**, National Conference on Undergraduate Research in Bozeman, Montana (cancelled due to COVID19) “Applying Membrane Protein Chaperone as Therapeutics to Prevent Alzheimer’s Disease”
27. Matthew Mitchell and Fu-Cheng Liang (2020) **Poster Presentation**, American Chemical Society National meeting in Philadelphia, PA (cancelled due to COVID19) “Applying Membrane Protein Chaperone as Therapeutics to Prevent Alzheimer’s Disease”
28. Kameron Shrum and Fu-Cheng Liang (2020) **Poster Presentation**, American Chemical Society National meeting in Philadelphia (cancelled due to COVID19) “LTD Does Not Function as Membrane Protein Chaperone During Protein Targeting in Chloroplast”
29. George Fu-Cheng Liang, (2020) Invited **Oral Presentation**, Biophysics and Quantitative Biology conference and workshop at Midwestern State University entitled “Apply membrane protein chaperone as therapeutics to prevent Alzheimer’s disease”.
30. Shermali Ratnasinghe and George Liang (2019) **Poster Presentation**, UGRCAF at Midwestern State University ”Utilize Membrane Protein Chaperone to Suppress the Amyloid Beta Aggregation”
31. Dianna Daniel and George Liang (2019) **Poster Presentation**, UGRCAF at Midwestern State University ”Utilize Membrane Protein Chaperone as a Treatment to Ameliorate Tau Protein Aggregation”
32. Fu-Cheng George Liang (2019) **Oral Presentation**, EURECA workshop at Midwestern State University “Directed Evolution to Improve Protein Folding in vivo”
33. Prisca Mbonu and George Liang (2019) **Oral Presentation**, UGRCAF at Midwestern State University ”Directed Evolution of Membrane Protein Chaperone to Ameliorate Protein Aggregation-associated Disease”
34. Dolly Mombeyarara, Cheslin Maloney and George Liang (2019) **Oral Presentation**, UGRCAF at Midwestern State University ” Applying Membrane Protein Chaperone as Therapeutics to Prevent Parkinson’s Disease”
35. Prisca Mbonu, Christopher Sun and Fu-Cheng Liang (2019) **Oral Presentation**, UGRCAF at Midwestern State University “Applying Membrane Protein Chaperone as Therapeutics to Prevent Alzheimer’s Disease”
36. Dolly Mombeyarara, Cheslin Maloney and George Liang (2019) **Oral Presentation**, UGROW Symposium at Midwestern State University ” Applying Membrane Protein Chaperone as Therapeutics to Prevent Parkinson’s Disease”
37. Prisca Mbonu, Christopher Sun and Fu-Cheng Liang (2019) **Oral Presentation**, UGROW Symposium at Midwestern State University “Applying Membrane Protein Chaperone as Therapeutics to Prevent Alzheimer’s Disease”

38. Fu-Cheng George Liang (2019) **Oral Presentation**, UGROW workshop at Midwestern State University “Principle and Hands-on Operations of Fluorescence Spectroscopy”
39. Kameron Shrum, Tyler Jones and F.C. Liang (2019) **Poster Presentation**, Texas Undergraduate Research Day at the Capital “Deciphering the Mechanism of Protein Targeting Machinery in Chloroplasts”
40. CUR TURCC institute conference, Capital University, Columbus, OH (2018)
41. Kameron Shrum, Tyler Jones and F.C. Liang (2018) **Poster Presentation**, Undergraduate Research and Creative activity Forum at Midwestern State University “Deciphering the Mechanism of Protein Targeting Machinery in Chloroplasts”
42. Fu-Cheng George Liang (2018) **Oral Presentation**, UGROW workshop at Midwestern State University “Using Biochemical and Biophysical Approach to Study the Dynamics of Membrane Protein Chaperone”
43. F.C. Liang, Gerard J. Kroon, Camille McAvoy, Chris Chi, Peter Wright and Shu-ou (2017) **Oral Presentation**, *22<sup>nd</sup> Biophysics Conference* in I-Shou University, Kaohsiung, Taiwan “Conformational Dynamics of a Membrane Protein Chaperone Enables Spatially-regulated Substrate Capture and Release”
44. F.C. Liang, Gerard J. Kroon, Camille McAvoy, Chris Chi, Peter Wright and Shu-ou (2016) **Oral Presentation**, Institute of biological chemistry, Academia Sinica, Taiwan “Conformational Dynamics of a Membrane Protein Chaperone Enables Spatially-regulated Substrate Capture and Release”
45. F.C. Liang, Gerard J. Kroon, Camille McAvoy, Chris Chi, Peter Wright and Shu-ou (2016) **Oral and Poster Presentation**, *Gordon Research Conference -Protein transport Across Cell Membranes* in Galveston, TX, USA “Conformational Dynamics of a Membrane Protein Chaperone Enables Spatially-regulated Substrate Capture and Release”
46. F.C. Liang, Camille McAvoy, Samantha Piskiewicz, Gerard J. Kroon, Maria Yamout, Peter Wright and Shu-ou (2015) **Poster Presentation**, *Biophysical Society 59<sup>th</sup> Annual Meeting* in Baltimore, MD. “Inter-domain Dynamics of a Novel Chaperone Enables Effective Capture of Membrane Protein Substrates”
47. F.C. Liang, U. Bageshwar, S. M. Musser (2012) **Poster Presentation**, *Gordon Research Conferences -Protein transport Across Cell Membranes* in Galveston, TX, USA “Position-dependent Effects of Polylysine on Sec Protein Transport.”
48. F.C. Liang, U. Bageshwar, S. M. Musser (2010) **Poster Presentation**, *Gordon Research Conferences -Protein transport Across Cell Membranes* in Galveston, TX, USA “Bacterial Sec Protein Transport is Rate-limiting by Precursor Length: A Single Turnover Study.”

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50. F.C. Liang, U. Bageshwar, and S. M. Musser (2008) **Oral Presentation**, *13<sup>th</sup> Annual Student Research Symposium* in College of Medicine Texas A&M Health Science Center, College Station, TX. “Single-turnover Transport Kinetics for the Sec Translocon Demonstrates a Single Rate-limiting Step that is Dependent on Precursor Length.”
51. F.C. Liang, U. Bageshwar, W. Yang and S. M. Musser (2007) **Poster Presentation**, *12<sup>th</sup> Annual Student Research Symposium* in College of Medicine Texas A&M Health Science Center, College Station, TX. “Single-turnover Transport Kinetics for the Sec Translocon Demonstrates a Single Rate-limiting Step that is Dependent on Precursor Length.”
52. S. M. Musser, F.C. Liang, U. Bageshwar, W. Yang (2005) **Poster Presentation**, *Gordon Research Conferences -Protein transport Across Cell Membranes* meeting in Colby-Sawyer College, New London, NH, USA “Real-time Sec Protein Transport under Single Turnover Conditions.”
53. Fu-Cheng Liang, Pei-Yeh Chen, Der-Lii Tzou, Ying-Ying Chen, Shu-Hua Chien, Chun-Cheng Lin, Yin-Ting Chang and Sunney I. Chan (2003) **Poster Presentation**, *Keystone Symposia-Frontiers of NMR in Molecular Biology* meeting in Taos, New Mexico, USA “Glycosylation of an  $\alpha$ -Helical Hairpin Peptide: A Model System for Studying the Possible Role of Glycosylation in Signal Transduction.”
54. Fu-Cheng Liang, Pei-Yeh Chen, Der-Lii Tzou, Ying-Ying Chen, Shu-Hua Chien, Chun-Cheng Lin, Yin-Ting Chang and Sunney I. Chan (2002) **Oral and Poster Presentation**, *The 16<sup>th</sup> Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB) Symposium: From gene to proteins: Frontiers in Biochemistry and Molecular Biology* in Academia Sinica, Taiwan “Glycosylation of an  $\alpha$ -Helical Hairpin Peptide: A Model System for Studying the Possible Role of Glycosylation in Signal Transduction.”
55. Fu-Cheng Liang, Pei-Yeh Chen, Der-Lii Tzou, Ying-Ying Chen, Shu-Hua Chien, Chun-Cheng Lin, Yin-Ting Chang and Sunney I. Chan (2002) **Poster Presentation**, *Graduate Students Thesis Poster Competition* in Department of Chemistry, National Taiwan University “Glycosylation of an  $\alpha$ -Helical Hairpin Peptide: A Model System for Studying the Possible Role of Glycosylation in Signal Transduction.”
56. Fu-Cheng Liang, Pei-Yeh Chen, Der-Lii Tzou, Ying-Ying Chen, Shu-Hua Chien, Chun-Cheng Lin, Yin-Ting Chang and Sunney I. Chan (2002) **Poster Presentation**, *The 8<sup>th</sup> Symposium on Recent Advances in Biophysics* in Academia Sinica, Taiwan “Glycosylation of

an  $\alpha$ -Helical Hairpin Peptide: A Model System for Studying the Possible Role of Glycosylation in Signal Transduction.”