

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Chen, Qiang, Ph.D.		POSITION TITLE Associate Professor
EDUCATION (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)		
INSTITUTION AND LOCATION	DEGREE (if applicable)	FIELD OF STUDY
Zhongshan University	B. S.	Plant Physiology & Biology
University of Arizona	Ph.D.	Biochemistry
University of Minnesota	Post-Doc	Molecular Biology & Genetics

POSITIONS

1998 -2002	Director, Division of Molecular Biology and Protein Characterization, CropTech Corp., Blacksburg, Virginia
2002 -2003	Research Faculty, Virginia Bioinformatics Institute, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
2003	Director, Protein Expression, Monsanto Protein Technologies, Monsanto Company, Madison, Wisconsin
2004 - 2005	Director, Protein Chemistry, Middleton Branch, Cardinal Health, Madison, Wisconsin
2006 -2011	Assistant Professor, The Biodesign Institute and Department of Applied Biological Sciences, Arizona State University, Tempe, Arizona
2011 -	Associate Professor with tenure, The Biodesign Institute and Department of Applied Biological Sciences, Arizona State University, Tempe, Arizona

HONORS AND AWARDS:

China-US Biochemistry Program (CUSBEA) Fellowship, CUSBEA- Ray Wu Foundation.
Academic Scholarship, University of Arizona
Postdoctoral Fellowship, PMGI Foundation, State of Minnesota
Postdoctoral Fellowship, National Institutes of Health (NIH)
Excellence Award, Protein Chemistry, Process Development), Cardinal Health

RELATED INDUSTRY EXPERIENCE

Dr. Chen has more than 10 years of experience in monoclonal antibody research in both biotechnology and pharmaceutical industry. He led a large division dedicated to optimize the expression, assembly and production of MABs and other therapeutic proteins in transgenic plants. He successfully directed several multi-institution collaborative projects for therapeutic MAB product development. Prior to joining ASU, he was the director of Division of Protein Chemistry at Cardinal Health, directing research on MAB-fusion protein design and optimization in mammalian cell cultures. He was also in charge of operations for manufacturing MAB and MAB fusion proteins for clinical trials under cGMP regulations.

SELECTED PEER-REVIEWED PUBLICATIONS:

Phoolcharoen W, Dye J, Kilbourne J, Piensook K, Pratt W, Arntzen C, **Chen Q** et al. A nonreplicating subunit vaccine protects mice against lethal Ebola virus challenge. PNAS 2011; doi: 10.1073/pnas.1117715108 (Published online before print)

Lai H, **Chen Q***. Bioprocessing of plant-derived virus-like particles of Norwalk virus capsid protein under current Good Manufacture Practice regulations. *Plant Cell Rep*, 2011; DOI: 10.1007/s00299-011-1196-6 (Online first before print).

He J[†], Lai H[†] ([†]co-first authors), Brock C, **Chen Q***. A novel system for rapid and cost-effective production of detection and diagnostic reagents of West Nile virus in plants. *J Biomed Biotechnol*, 2011; doi:10.1155/2012/106783

Lai H, He J, Engle M, Diamond M, **Chen Q***. Robust production of virus-like particles and monoclonal antibodies with geminiviral replicon vectors in lettuce. *Plant Biotech J*. 2011; DOI: 10.1111/j.1467-7652.2011.00649.x. [Epub ahead of print]

Chen Q. Turning a new leaf. *European Biopharm Rev*. 2011; 2:64-68

Phoolcharoen W, Bhoo S, Lai H, Ma J, Arntzen C, **Chen Q***, Mason H. Expression of an immunogenic Ebola immune complex in *Nicotiana benthamiana*. *Plant Biotech J*. 2011; 9(7):807-816

Chen Q, He J, Phoolcharoen W, Mason H. Geminiviral Vectors Based on Bean Yellow Dwarf Virus for Production of Vaccine Antigens and Monoclonal Antibodies in Plants. *Human Vaccines* 2011; 7(3):331-338

Chen Q “Genetically Engineered Horticultural Crops for Pharmaceutical Production”. In: *Transgenic Horticultural Crops: Challenges, and Opportunities - Essays by Experts*, ed. by B. Mou, R. Scorza, CRC Press, 2011; 4: 85-126

Lai H, Engle M, Fuchs A, Keller Ts, Johnson S, Gorlatov S, Diamond M, **Chen Q**. A monoclonal antibody produced in plants efficiently treats West Nile virus infection in mice. *PNAS* 2010; 107: 2419-2424

Huang Z, Phoolcharoen W, Lai H, Piensook K, Cardineau G, Zeitlin L, Whaley K, Arntzen C, Mason H, **Chen Q**. High-level rapid production of full-size monoclonal antibodies in plants by a single-vector DNA replicon system. *Biotech. and Bioeng* 2010; 106(1) 9-17

Kralovetz M, Mason H, **Chen Q**. Norwalk Virus-like Particles as Vaccines. *Expert Review of Vaccines* 2010; 9:299-307.

Chen Q, Tacket C, Mason H, Mor T, Cardineau G, Arntzen C. 2009 “Subunit Vaccines Produced Using Plant Biotechnology”. In: *New Generation Vaccines; Fourth Edition*, ed. by M. Levine, Informa Healthcare, New York. 30:306-315.

Huang Z, **Chen Q**, Hjelm B, Arntzen C, Mason H. A DNA Replicon System for Rapid High-level Production of Virus-like Particles in Plants. *Biotech. and Bioeng*. 2009; 103: 706-714

Slater S, et al. **Chen Q**, Phoolcharoen W, et al., Wood D. Genome Sequences of Three *Agrobacterium* Biovars Elucidate the Evolution of Multichromosome Genomes. *J. Bact.* 2009; 191: 2501-1511.

Chen Q. Expression and Purification of Pharmaceutical Proteins from Plants. *Biol. Eng.* 2008; 1(4): 291-321.

Lico C, **Chen Q**, Santi L. Viral Vectors for Production of Recombinant Proteins in Plants. *J Cell. Physiol.* 2008; 216:366-377.

Santi L, et al. Arntzen C, **Chen Q**, and Mason H. Orally Immunogenic Norwalk Virus-like Particles Were Efficiently Produced by a Plant Viral Expression. *Vaccine*, 2008; 26: 1846-1854

Arntzen C, Mason H, Khalsa G, **Chen, Q.** Designing and Delivering Plant-based Vaccines for the Developing World. *Petria Plant Pathol.* 2007; 17:55-70.

Buswell S, **Chen Q,** Van Cott K, and Zhang C. Expression of porcine prorelaxin in transgenic tobacco. *Ann. N.Y. Acad. Sci.* 2005;1041:77-81

Chen Q, Silflow C. Isolation and Characterization of Glutamine Synthetase Genes in *Chlamydomonas reinhardtii*. *Plant Physiol.* 1996; 112:987-996

Chen Q, Osteryong K, Vierling E. A 21 kDa Chloroplast heat Shock Protein Assembles into High Molecular Weight Complex *In Vivo* and *In Organelle*. *J. Biol. Chem.* 1994; 269:13216-13223

Chen Q, Vierling E. Analysis of Conserved Domains Identifies a Unique Structural Feature of a Chloroplast Heat Shock Protein. *Mol. Gen. Genetics.* 1991; 226:425-431

Chen Q, Lauzon LM, DeRocher A, Vierling E. Accumulation, Stability and Localization of a Major Chloroplast Heat Shock Protein. *J. Cell Biol.* 1990; 110:1873-1883.

Vierling E, Harris LM, **Chen Q.** The Major Low Molecular Weight Heat Shock Protein in Chloroplasts Shows Antigenic Conservation Among Diverse Higher Plant Species. *Mol. and Cell Biol.* 1989; 9:461-468.

INDUSTRY PAPER

Chen Q, Morris G, Lai H. cGMP Processing of a Plant-produced Human Vaccine Candidate for Sexually Transmitted Infections. *ASABE* 2009; 095608:1-6.

Chen Q, Slater SC, Arntzen CJ. Translational Research to Bridge Bench Discovery and Clinical Products for Plant Made Pharmaceuticals. *ASABE* 2006; 067099:1-10.

Russell DA, **Chen Q,** Shen J, Dudeck J, Thompson L, Petersen B, Moran D, Walters D, Slater SC. Genetic Element Testing for Improved Accumulation of Secreted Endosperm Proteins. 2003; *MSL-19145:* 1-30.

CURRENT SUPPORT

OPP1043526 (Chen, PI) 11/01/11 – 04/30/13
Bill & Melinda Gates Foundation \$100,000
Alternative Delivery of Therapeutic Human Milk Proteins to Infants using Plants
The major goal of this grant is to provide antibody-based proteins that have antibacterial and antiviral activities, enhance an infant's immune system, and increase the absorption of other nutrients.

1U01AI75549-01 (Chen, PI) 8/01/2007 – 7/31/2012
NIH-NIAID \$1,500,000.00
Plant-derived MAb Therapeutics for West Nile Virus
The major goal of this project is to produce plant-derived monoclonal antibody E16 as a therapeutic agent for west Nile virus infection.

U19AI066332-01 (Arntzen PI, Chen, Co-PI) 07/01/2005-06/30/2012
HHS-NIH-NIAID \$3,721,397.00
Plant-derived Vaccines Against Hepatitis C Cooperative Research Center
Major Goal is to test the capacity of plant cells and tissues to express genes derived from the Hepatitis C virus; to isolate the HCV-proteins from plant tissues and test them for their ability to stimulate immune responses in pre-clinical animal trials.

U19 AI 062150 (Arntzen, overall PI, Chen, Production Core PI)

9/1/2004 – 8/31/2012

AHRQ

\$7,453,234.00

Plant Made Microbicides and Mucosal Vaccines for STIs

The major goal of this project is to design and produce mucosal vaccines in plant expression systems for sexually transmitted viral diseases and to test these vaccines in pre-clinical animal trials.

U01AI061253 (Arntzen, PI, Chen, Co-PI)

3/15/2005 – 2/28/2011

HHS-NIH-NIAID

\$3,202,318.00

Development of a Vaccine for Ebola Virus in Plant System

The major goal of this project is to develop plant-expressed monoclonal antibody fusion proteins as a vaccine against Ebola virus.

USDA-SBIR (Chen, PI)

9/1/2007 – 8/31/2008

USDA

\$100,000

Targeted Homologous Recombination in Meiotic Plant Cells

This proposal aims to use geminivirus-based vectors as homologous recombination substrates for targeted gene changes in Arabidopsis.