

## **Curriculum vitae: Maher Abou Hachem, Ph. D., Associate Professor**

**Work:** Enzyme and Protein Chemistry (EPC), Department of Systems Biology, Technical University of Denmark, Søtofts Plads, Bldg. 224; DK-2800 Kgs. Lyngby, Denmark. Phone: +45 4525 2732; cell: +45 27583811, e-mail: [maha@bio.dtu.dk](mailto:maha@bio.dtu.dk).

**Private:** Sløjfen 11, 3060, Espergærde, Denmark. Born 010771, Beirut; Swedish citizen; married, one child born 2003.

### **Education**

2003 Ph.D. in Biotechnology, Lund University, Lund, Sweden.  
1998 M.Sc. in Chemical Engineering, Lund University, Lund, Sweden.

### **Employment**

2008 Associate Professor in Food Protein Chemistry, Enzyme and Protein Chemistry (EPC).  
2004 Assistant Professor in Food Protein Chemistry, EPC, DTU Systems Biology.  
2003 Post-doctoral research fellow at Carlsberg Laboratory, Denmark (EU FP5 project).

### **Publications, Patents and Presentations**

62 publications: 46 peer reviewed papers (since 2000), 14 peer reviewed proceedings, 1 non peer refereed proceeding, 1 patent (10 papers as (co-)corresponding author, 4 as last and 10 as first author). More than 150 conference contributions (13 oral presentations including 4 as an invited speaker in Sweden, UK, Norway and Czech Republic). H-index 18, i10-index 29, 817 citations (Google Scholar).

### **Research interests and core expertise**

- Glycan metabolism in health beneficial members of the human gut microbiota with focus on carbohydrate active enzymes, transporters and glycan-protein interactions relevant to human health and fitness to the human gut niche.
- Enzymatic processing of recalcitrant biomass and polysaccharides of different origin.
- Structure-function relationships, enzymology and interactions of carbohydrate active proteins with carbohydrate substrates/inhibitors/metal-ion ligands.

### **Core expertise**

- Protein stability and bio-molecular interactions using calorimetric (ITC, DSC) and spectroscopic (SPR, fluorescence, CD) techniques.
- Enzymology and structure-function studies.
- Recombinant protein production using high cell-density culture techniques applied in bacterial and yeast expression systems.
- Protein downstream processing.

### **Grants**

- 2014-2017 DFF | Natural Sciences (FNU) grant "oligosaccharide transport in probiotic bacteria" (5.9 million DKK).
- 2014 Supervisor of the project "Expanding the toolbox for plant biomass modification and combating fungal pathogenic attack on major crops: Novel lytic polysaccharide monooxygenases from major plant pathogenic fungi" funded by a two year H.C. Ørsted-Marie curie cofund postdoc grant for Dr. Majid Haddad Momeni.
- 2013 Carlsberg Foundation grant for purchase of a DSC instrument (0.4 million DKK).
- 2013 Supervisor of the project "Discovering proteins and molecular mechanisms in probiotic bacteria - A new approach to improve human health" granted 1 year post-doc fellowship (0.12 million DKK) from UNESCO-L'Oreal International Fellowships for Women in Science for Dr. Tania Pozzo.
- 2012-2015 Novo Nordisk Foundation Committee for Biotechnology-Based Synthesis and Production grant "Novel oxidative enzymes for resistant starch degradation and oxidation towards green and energy-efficient industrial processes" (2.1 million DKK).
- 2011 Japan Society for Promotion of Science short fellowship grant (host: Professor Atsuo Kimura, University of Hokkaido).
- 2011 Carlsberg Foundation grant for purchase of an ITC instrument (0.5 million DKK).

### **Managerial experience**

- Manager (PI) of two research projects (see above).
- Participant and co-applicant on the project "Exploring tree-derived hemicelluloses as a source for prebiotics" (Norwegian research council BIONÆR grant, PI: Bjørge Vestereng, Ås University, Norway, 2015-2018).
- Participant and co-applicant of the project "The role of secondary metabolites in potentiating depolymerization of recalcitrant polysaccharides" (Novo Nordic Foundation grant, PI: Jens Christian Frisvad, 2014-2016)
- Participant and co-applicant on the project: How food structure affects satiety (StructSat) (Strategic Research in Health, FøSu grant, PI: Richard Ibsen, KU, 2014-2017).
- Participant and co-applicant Design, gram scale enzymatic synthesis and functionality of human milk oligosaccharides (OliGram) (Strategic Research in Health, FøSu grant, PI Peter Stougaard, KU, 2014-2017).
- Participant and co-applicant on the project "Associative interactions between exopolysaccharides from lactic acid bacteria and milk proteins. Gaining insights deployable in design of optimised food texture" (FTP grant, PI Birte Svensson, 2013-2016).
- Participant on 3 concluded projects (1 FNU, 2 Strategic Research Council FøSu grants).
- Concluded three module leadership course (2010, Danish Psychiatry Foundation).

### **Organisation committees**

- Member of the committee that established the fermentation platform at the department of Systems Biology, DTU (budget 30 million DKK). Currently responsible for pilot scale fermentors (5 L) and downstream processing equipment.
- Member of the organising committee of the 6<sup>th</sup> European Symposium on Enzymes in Grain Processing (ESEGP-6) in Copenhagen, Denmark, 2011.
- Member of protein.DTU task force, which is responsible for generation and coordination of protein related research activities across DTU.

### **Teaching**

- Pedagogic course in University Teaching at DTU (UDtU, 2008).
- Teaching experience at all levels in biochemistry and protein chemistry; Main responsible for an experimental biochemistry course (course code 27023, 5 ECTS credits, ca 130 students/year), and lecturer in basic (course code 27022) and advanced (course code 27301) biochemistry courses at DTU, Systems Biology. Advisor for students in the Biotechnology and communication course (code 27007).
- Tutor for Bachelor programs at System Biology (2013-).
- Responsible for designing and implementing a practical exam in enzyme kinetics for the international biology Olympiad international, IBO competition (Århus University, 2015).

### **Supervision**

Supervision or co-supervision of 8 post-docs (6 completed), 16 Ph.D. students (8 completed), 19 undergraduate M.Sc. and 10 B.Sc. students, 1 technician, 2 technician students.

### **Honors and awards**

- 2013 Invited keynote lecture at the 10<sup>th</sup> Carbohydrate Bioengineering Meeting, Prague, Czech Republic.
- 2011 FEBS Journal top-cited paper award.

### **Scientific committees & refereeing**

- Referee for several biochemistry, biotechnology, and microbiology journals.
- Committee member of seven Ph.D. dissertations.
- Board member of the Japan Society for Promotion of Science (JSPS) alumini club in Denmark.