

## Marc C. Deller, D.Phil

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### Career Snapshot

- **Fifteen years of experience as a Structural & Molecular Biologist, including 5 years industrial experience.**
- **Expert in protein crystallization and automation.**
- **Expert knowledge of crystallographic and bioinformatics software.**

### Research Interests

- *Structure function relationship of proteases, kinases, cytokines and polymerases and their roles in receptor mediated signaling and disease.*
- *The use of protein structural information for rational drug-design.*
- *Development of automation technologies especially to aid in tackling difficult crystallization projects.*

### Awards

- 1999 – Postdoctoral Fellowship, The University of Oxford, UK.

## Experienced Structural & Molecular Biologist

*Currently Senior Scientist at The Scripps Research Institute/JCSG for the past 6 years. Key responsibilities include:*

**Management of protein targets • Team lead on collaborator projects • Development and management of automation robotics • Protein purification and crystallization • Protein structure determination and analysis • Automation development • Linux and windows system administration**

### Key Skills

- **Excellent personal skills**, including time management, presentation and communication.
- **Working knowledge of recombinant DNA techniques** including PCR and mutagenesis.
- **Practical experience of protein expression systems** including both prokaryotic and eukaryotic systems such as *E.coli*, yeast, CHO, 293T and baculovirus.
- **Experienced use of molecular biology techniques** for the characterization and purification of proteins such as western blots, ELISA, HPLC/FPLC and ThermoFluor.
- **Working knowledge of structure-based drug design** and iterative structure-based design cycles.
- **Experience of high-throughput crystallography** and Structural Genomics.
- **Proficient in many scientific computing languages** including MATLAB, LABVIEW and PYTHON.
- **Detailed knowledge of many crystallographic techniques** including crystal growth, synchrotron data collection, cryo-crystallography and structure determination (MAD, SIRAS, MIR and MR).
- **Practical experience of many crystallographic software** suites including HKL2000, SHELX, CNX, CCP4, SHARP, SOLVE/RESOLVE, ArpWarp, PHASES, XtalView, MIFIT and Pymol.
- **Hands on experience with automation robotics** including liquid handling, dispensing and imaging systems from Rigaku, ArtRobbins, Fluidigm, Emerald Biosciences, VIAFLO and Douglas Instruments.

### Professional Experience

**PFIZER GLOBAL RESEARCH AND DEVELOPMENT** — San Diego, CA.

**Principal Scientist**, 2001 to 2005

- Lead Research Scientist supporting ophthalmology, oncology and anti-viral structure-based drug design programs.

**YALE UNIVERSITY, SCHOOL OF MEDICINE** — New Haven, CT.

**Post-Doctoral Fellow**, 1999 to 2001

- Cloning, expression, purification and crystallographic analysis of the cytoplasmic region of Erythropoietin receptor and JAK protein kinase.

**CORPUS CHRISTI COLLEGE, THE UNIVERSITY OF OXFORD** — Oxford, UK.

**Tutor Undergraduate Biochemistry**, 1998 to 1999

- 1995 – Certificate of Industrial Biotechnology, Boots Pharmaceuticals, UK.
- 1995 – Medical Research Council Fellowship, UK.

### Computer Skills

- System administrator level skills on Mac, Windows and Linux platforms.
- Extensive web development and scripting experience.

### Professional Affiliations

- British Crystallographic Association.
- American Crystallographic Association.
- Regular reviewer for "Protein Purification and Expression" and "Acta Crystallographica Section F".

### Personal Interests

- Cycling, cyclocross and mountain biking.
- Computer programming, electronics and technology.
- Classical and surf guitar.
- Surf music.
- Record collecting.

**BOOT PHARMACEUTICALS**  
— Nottingham, UK.

**Intern**, 1995 to 1999

- Preliminary *ex vivo* and *in vitro* profiling of potential anti-inflammatory drug candidates. Responsible for development of protocols for monitoring inositol-phosphate, arachidonic acid and chemotaxis in macrophages.

### Education

**THE UNIVERSITY OF OXFORD, UK** — D.Phil., 1999

Laboratory of Molecular Biophysics

Doctoral thesis titled "Structural Studies of Cytokines and Cytokine Receptors"

**THE UNIVERSITY OF LEEDS, UK** — B.Sc., 1995

Department of Biochemistry and Molecular Biology

First Class honors (US equivalent: A or 70-100%)

### Selected Publications

**JCSG Top96: A Rationally Designed Crystallization Screen Based on over 1000 Deposited Protein Structures from the Joint Center for Structural Genomics.** Deller MC, Clayton T, Elsiger M-A, Lesley SA, Wilson IA. Manuscript in preparation, Dec 2013.

**Approaches to automated protein crystal harvesting: The harvest is plentiful, but the laborers are few.** Marc C. Deller and Bernhard Rupp. Manuscript in preparation, Dec 2013.

**Structural insights into the recognition of phospho-peptide by the FHA domain of kanadaplin.** Qingping Xu, Marc C. Deller, Tine K. Nielsen, Joanna C. Grant, Scott A. Lesley, Marc-André Elsiger, Ashley M. Deacon, and Ian A. Wilson. In press. Biochemistry, Dec 2013.

**Crystal Structure of a Soluble Cleaved HIV-1 Envelope Trimer.** Jean-Philippe Julien, Albert Cupo, Devin Sok, Robyn L. Stanfield, Dmitry Lyumkis, Marc C. Deller, Per-Johan Klasse, Dennis R. Burton, Rogier W. Sanders, John P. Moore, Andrew B. Ward, and Ian A. Wilson. Science. 31 October 2013.

**Supersite of immune vulnerability on the glycosylated face of HIV-1 envelope glycoprotein gp120.** Kong L, Lee J-H, Doores KL, Murin CD, Julien J-P, McBride R, Liu Y, Andre Marozsan, Albert Cupo, Per-Johan Klasse, Simon Hoffenberg, Michael Caulfield, C. Richter King, Yuanzi Hua, Khoa M. Le, Reza Khayat, Marc C. Deller, Thomas Clayton, Henry Tien, Ten Feizi, Rogier W. Sanders, James C. Paulson, John P. Moore, Robyn L. Stanfield, Dennis R. Burton, Andrew B. Ward, Ian A. Wilson. Nature Structural & Molecular Biology 20, 796–803 (2013).

**Structure of hepatitis C virus envelope glycoprotein E2 antigenic site 412 to 423 in complex with antibody AP33.** Kong L, Giang E, Nieuwsma T, Robbins JB, Deller MC, Stanfield RL, Wilson IA, Law M. J Virol. 2012 Dec; 86(23):13085-8.

**Functional and structural characterization of a thermostable acetyl esterase from *Thermotoga maritima*.** Levisson M, Han GW, Deller MC, Xu Q, Biely P, Hendriks S, Ten Eyck LF, Flensburg C, Roversi P, Miller MD, McMullan D, von Delft F, Kreuzsch A, Deacon AM, van der Oost J, Lesley SA, Elsiger MA, Kengen SW, Wilson IA. Proteins. 2012 Jun; 80(6):1545-59.

**Crystal structure of a metal-dependent phosphoesterase (YP\_910028.1) from *Bifidobacterium adolescentis*: Computational prediction and experimental validation of phosphoesterase activity.**

Han GW, Ko J, Farr CL, **Deller MC**, Xu Q, Chiu HJ, Miller MD, Sefcikova J, Somarowthu S, Beuning PJ, Elsliger MA, Deacon AM, Godzik A, Lesley SA, Wilson IA, Ondrechen MJ. *Proteins*. 2011 Jul; 79(7):2146-60

**A structural basis for the regulatory inactivation of DnaA.** Xu Q, McMullan D, Abdubek P, Astakhova T, Carlton D, Chen C, Chiu HJ, Clayton T, Das D, **Deller MC**, Duan L, Elsliger MA, Feuerhelm J, Hale J, Han GW, Jaroszewski L, Jin KK, Johnson HA, Klock HE, Knuth MW, Kozbial P, Sri Krishna S, Kumar A, Marciano D, Miller MD, Morse AT, Nigoghossian E, Nopakun A, Okach L, Oommachen S, Paulsen J, Puckett C, Reyes R, Rife CL, Sefcovic N, Trame C, van den Bedem H, Weekes D, Hodgson KO, Wooley J, Deacon AM, Godzik A, Lesley SA, Wilson IA. *J Mol Biol*. 2009 Jan 16; 385(2):368-80.

**Crystal structure of homoserine O-succinyltransferase from *Bacillus cereus* at 2.4 Å resolution.** Zubieta C, Krishna SS, McMullan D, Miller MD, Abdubek P, Agarwalla S, Ambing E, Astakhova T, Axelrod HL, Carlton D, Chiu HJ, Clayton T, **Deller M**, DiDonato M, Duan L, Elsliger MA, Grzechnik SK, Hale J, Hampton E, Han GW, Haugen J, Jaroszewski L, Jin KK, Klock HE, Knuth MW, Koesema E, Kumar A, Marciano D, Morse AT, Nigoghossian E, Oommachen S, Reyes R, Rife CL, van den Bedem H, Weekes D, White A, Xu Q, Hodgson KO, Wooley J, Deacon AM, Godzik A, Lesley SA, Wilson IA. *Proteins*. 2007 Sep 1; 68(4):999-1005.

**Crystal structure and functional dissection of the cytostatic cytokine oncostatin M.** **Deller MC**, Hudson KR, Ikemizu S, Bravo J, Jones EY, Heath JK. *Structure*. 2000 Aug 15; 8(8):863-74.

**Cell surface receptors.** **Deller MC**, Yvonne Jones E. *Curr Opin Struct Biol*. 2000 Apr;10(2):213-9.

### **Key Posters and Presentations**

**"The HIV/AIDS Epidemic: Pharmaceutical Approaches to Antiviral Drug Discovery".** **Deller, M.C.** Pfizer Inc., University of California San Diego. U.S.A. (2004). [Invited guest lecture to interdisciplinary class on "Contemporary Issues"].

**"HIV Structural Biology: The Full Story".** **Deller, M.C.** Pfizer Inc., Sandwich. U.K. (2003). [Guest speaker to update worldwide health specialists on project progress].

**"Preliminary Crystallographic Studies of the Cytokine Oncostatin-M".** **Deller, M.C.**, Hudson, K.R., Ikemizu, S., Bravo, J., Jones, E.Y. and Heath, J.K. *Nature Biotechnology Winter Symposium: Signal Transduction and Therapeutic Strategies*. Miami, U.S.A. (1999). [Poster session at conference].

**"Structural Studies of Cytokines and their Receptors".** **Deller, M.C.** NATO summer school: Biomolecular recognition. Spetse, Greece (1997). [Poster session at conference].

### **References**



Prof. Ian Wilson

Prof. Scott Lesley

Dr. Michele McTigue

Dr. Richard Ogden