

Curriculum Vitae of Federico De Masi, PhD

Education and Employment

- 2016 – Present Senior Researcher, Dpt. of Bioinformatics, Technical University of Denmark (DK)
- 2016 – 2016 Associate Professor, Novo Nordisk Foundation Centre for Protein Research, University of Copenhagen (DK)
- 2014 – 2016 Associate Professor at Regulatory Genomics group, Centre for Biological Sequence analysis, Department of Systems Biology, Technical University of Denmark (DK)
- 2010 – 2014 Assistant Professor at Regulatory Genomics group, Centre for Biological Sequence analysis, Department of Systems Biology, Technical University of Denmark (DK)
- 2004 – 2009 Postdoctoral fellow at Harvard Medical School and at the Brigham and Women's Hospital, Boston (USA)
- 2004 – 2004 Bridging Postdoc at the European Molecular Biology Laboratory, Heidelberg (D).
- 2000 – 2004 Ph.D. Degree in Biochemistry and Biochemical Instrumentation, European Molecular Biology Laboratory and University of Glasgow
- 1998 – 1999 Novartis Pharma AG, Rheumatoid Arthritis Department, Basel (CH)
- 1996 – 2000 B.Sc (Hons wwp) Biochemistry; University of Glasgow (UK)

Scientific Competences

- Biological Networks: Protein-DNA Interactions; protein-protein interaction; miRNA/mRNA interactions
- NGS Data Analysis: ChIP-, smallRNA- and RNA-Seq data analysis
- Microarray development and analysis: design of protein-protein and DNA-protein microarray experiments; data analysis methods and pipelines for microarray experiments;
- IT: Perl, MatLab, R, MySQL;
- System Administration: proficient in administering SUSE servers, UCSC Genome Browser, Galaxy Server, MySQL databases

Major External Collaborations

I am responsible for Data Management for the DIRECT EU grant awarded to Prof Søren Brunak. In this position, I am responsible for all aspects related to data, user and infrastructure management. I am also involved in general project management and am a central element in all discussions related to data generation, management and analysis. I do also participate in the generation, modification and implementation of security rules for the project.

In parallel, I am collaborating with the labs of Prof. Edith Heard (Institut Curie, Paris), Prof. Francis Stewart (Dresden Technical University), as part of the SyBoSS consortium in which I am the main researcher analysing RNA-, smallRNA- and ChIP-Seq data.

I have a profuse international network that includes, among others: Edith Heard (Institut Curie, Paris) Luis Serrano (CRG, Barcelona), Toby Gibson (EMBL, Heidelberg), Marian Walhout (UMASSMed, USA), Martha Bulyk (HMS, USA), Dana Pe'er (Sloan Kettering, USA) and Frank Holstege (Utrecht, NL). Finally, I am leading a joint effort between DTU, Copenhagen University and the Copenhagen Business School, which aims at establishing a range of courses and other activities in "Patenting in Biotechnology".

Leadership Competences

- Currently working as Data Manager for DIRECT (EU grant).
- Coordinated three scientific projects resulting in 4 major publications and 1 patent.
- Coordinated the overall NGS analysis for the SyBoSS consortium (<http://www.syboss.eu>)
- Founding member of the ProteomeBinders consortium (2003-). <http://www.proteomebinders.org/>

- Currently leading a joint effort in “Intellectual Property Rights in Biotech” education in conjunction with the Copenhagen Business School and Copenhagen University.

Conferences, Courses and Workshops

- Organiser of several conferences, symposia and courses:
 - Network Biology – Network Medicine; Helsingør, Denmark – **May 11-13 2012**
 - EMBO Course "Microarray technology: genome - proteome - function"; Heidelberg, **2001, 2002, 2003, 2004**
 - EMBO Course "Microarray techniques: applications in bio-medical research"; Tokyo, **2004**
 - EMBL-EMBO Science and Society Mini symposium; Heidelberg, **2003**
 - 3rd EMBL PhD Symposium - "Life within boundaries: membranes and compartments in biology" Heidelberg, **2002**
- Invited speaker at several international scientific conferences and courses:
 - Orfeome Meeting; Boston (USA) – **October 2006**
 - "Biomedicine in the Post-genomic Era"; Mexico DF (Mexico) – **December 2005**
 - EMBO Course on microarrays; Tokyo (Japan) - **2004**
 - 2nd Human Proteome Organisation Meeting, Montreal (Canada) – **October 2003**
 - ESF/EU MolTools Workshop: Ligand binding molecules against the Human Proteome; Cambridge (UK) – **September 2003**
 - 11th European Congress on Biotechnology; Basel (CH) – **September 2003**
 - CNCBD/EBNIC Proteomics Workshop, Zhuhai (P.R. China) – **December 2001**
 - EMBO Course on microarrays; Heidelberg (Germany) – **2001, 2002, 2003**
- Guest speaker at institutional seminar series:
 - DTU Systems Biology Seminar Series; Lyngby (Denmark) - **August 2014**
 - Institute for Cancer Research; London, (UK) Host: Chris Bakal – **February 2012**
 - Centre de Regulacion Genomica; Barcelona (Spain) Host: Luis Serrano – **November 2008**
 - EMBL; Heidelberg (Germany) Host: Eileen Furlong – **November 2008**
 - Centre de Regulacion Genomica; Barcelona (Spain) Host: Luis Serrano – **August 2007**
 - Harvard Medical School; Boston (USA) Host: Martha Bulyk - Postdoc interview – **May 2004**
 - Harvard; Cambridge (USA) Host: Gavin MacBeath - Postdoc interview – **May 2004**
 - Babraham Institute; Babraham (UK) Host: Mike Taussig – **July 2003**
 - Burnham Institute; La Jolla (USA) Host: Rob Liddington – **January 2003**
 - Università Roma 2 “Tor Vergata”; Rome (Italy) Host: Gianni Cesareni – **August 2003**
 - Novartis Pharma AG; Basel (CH) Host: Business Development – **October 2003**
 - CNR Cell Biology; Rome (Italy) Host: Glauco Tocchini-Valentini – **September 2001**
- Poster presentations at international conferences
 - 8th EMBO Conference: From Functional Genomics to Systems Biology - **November 2016**
 - 7th EMBO Conference: From Functional Genomics to Systems Biology - **November 2014**
 - 6th EMBO Conference: From Functional Genomics to Systems Biology - **November 2012**
 - 5th EMBO Conference: From Functional Genomics to Systems Biology - **November 2010**
 - 4th EMBO Conference: From Functional Genomics to Systems Biology - **November 2008**
 - 3rd EMBO Conference: From Functional Genomics to Systems Biology - **November 2006**
 - CSHL/WT Interaction Networks; Hinxton (UK) – **August 2007**
 - MGED9; Seattle (USA) – **September 2006**
 - PepTalk + 3rd Annual Human Proteome Project Meeting; San Diego (USA) – **January 2003**

Teaching and Student Supervision

Current Courses

- Module 3: Value creation in pharma- and biotechnology: Main coordinator. Give lectures, run Q&A sessions, invite external speakers and coach students in writing their business plans.
- Main coordinator of Coursera course on “Patenting in Biotechnology” in collaboration with the University of Copenhagen and the Copenhagen Business School.
- Next Generation Sequencing: Lecturer for ChIP-Seq technology
- Network Biology and NGS modules at Sino Danish Centre’s OMICS Masters Programme - Beijing
- DTU’s senior scientist at the Bio-Business Innovation Programme (BBIP) at the Copenhagen Business School
<http://www.cbs.dk/uddannelser/kandidatuddannelser/biobusiness-and-innovation-platform-bbip>

Past Courses

- Systems Biology: Course co-coordinator and teacher.
- Institute of Systems Biology PhD Course: Lectures in Regulatory Networks and ChIP-Seq technology

Opponent at PhD Defenses

- Damien Plichta; DTU Systems Biology; “Systems biology of the human gut microbiome”. Supervisor; Assoc. Prof. Henrik Bjørn Nielsen – **November 2015**

Student supervision

- Co-Supervision of PhD students
 - Michael Engmark; DTU Bioinformatics. Main Supervisor: Prof. Ole Lund - **Present**
 - Francesco Russo; NNF Center for Protein Research. Main Supervisor: Prof. Søren Brunak - **Present**
- Masters Students
 - Anna-Lisa Schaap-Johansen; Sino-Danish Centre (Beijing). “The Melanocortin Signalling System and Ethnic Variances in Cancer”; **Present**
 - Øystein Monsten; DTU Systems Biology. “The Role of Line-1 Elements in X-chromosomal silencing”; Grade 10 - **August 2015**
 - Christina Milbo; DTU Systems Biology. “Targeting snakevenom using DNA encoded libraries”; Grade 12 – **April 2015**
 - Jane Lind Nybo Rasmussen; DTU Systems Biology. “Epigenetic and Transcriptional Regulation of LINE1 Elements in Embryonic Stem Cells”. Grade 12 – **September 2014**
- Special Courses
 - Line Præst Lauridsen; DTU Systems Biology. “Venomics analyses of the Eastern green mamba and the Black cobra” – **January 2018**
 - Jane Lind Nybo Rasmussen; DTU Systems Biology. “ChIP-Seq data analysis”. **February 2014**
- Erasmus Students
 - Baudoin Delépine; Université Paris Diderot – INSERM UMR-S 973; **March-May 2013**

Publications

I have authored 11 peer reviewed publications of which 3 have me as a first author and 1 in which I am the senior and corresponding author. I am also an inventor of a granted patent. All of my publications involve extensive laboratory work in conjunction with state-of-the-art bioinformatics methods for data analysis. My publications have been cited well over 800 times. I am also an inventor in 1 patent granted in various EU States, Canada, Australia, China and Japan.

Publication Statistics

Google scholar: 1035 citations; h-index: 9; i10-index: 9

ResearchGate: 817 citations; h-index: 9; h-index (excluding self-citations): 9

Key Publications

The following publications and patents are the result of research projects which I actively lead and coordinated. They all involved researchers from different international universities and I did play a leading role in setting up these collaborations and in planning, setting and implementing deadlines and milestones. I was also the “driving force” in the publication efforts for the papers from the year 2011 and 2014.

My PhD project resulted in a granted patent and a publication in the journal *Proteomics*. My role in this project has been to design, implement and optimise a novel high-throughput microarray method for the direct screening and identification of monoclonal antibodies from hybridoma supernatants.

(*: contributed equally - [§] co-corresponding author)

- Lindemose, S; Jensen, MK; Van de Velde, J; O’Shea, C.; Heyndrickx, KS; Workman, CT; Vandepoele, K; Skriver, K[§]; **De Masi, F[§]**; A DNA binding-site landscape and regulatory network analysis for the family of NAC stress response transcription factors in *Arabidopsis thaliana* ***Nucleic Acids Research*** (2014) 10.1093/nar/gku502
- **De Masi, F.***; Grove, C*; Vedenko, A; Alibés, A; Gisselbrecht, SG; Serrano, L; Bulyk, ML; Walhout, AJM Using a structural and logics systems approach to infer bHLH-DNA binding specificity determinants ***Nucleic Acids Research*** (2011) 10.1093/nar/gkr070
- Grove, C*; **De Masi F***; Newburger D; Barrasa I; Bulyk, ML; Walhout, AC Specificity and Promiscuity in Functional Divergence of *C. elegans* bHLH Transcription Factors ***Cell*** (2009) 138: 314-327
- **De Masi, F***; Sawyer, AM* “Method for producing monoclonal antibodies” AU2003227873B2, CA2480717C, CN100402553C, EP1506235C, JP4429736B2 (and WO03089471A1)
- **De Masi, F**; Chiarella, P; Wilhelm, H; Massimi, M; Bullard, B; Ansorge, W; Sawyer, AM. High throughput production of mouse monoclonal antibodies using antigen microarrays; ***Proteomics*** (2005) 5:4070-81

Other Publications

- Engmark, M., Andersen, M. R., Laustsen, A. H., Patel, J., Sullivan, E., **De Masi, F.**, Hansen, C. S., Kringelum, J. V., Lomonte, B., Gutiérrez, J. M. & Lund, O. (2016) High-throughput epitope profiling of snake venom toxins: unveiling the complexity of antigen-antibody interactions of antivenoms. ***Sci. Reports*** (6) 14
- Tognon E, Kobia F, Busi I, Fumagalli A, **De Masi F**, Vaccari T; Control of lysosomal biogenesis and Notch-dependent tissue patterning by components of the TFEB/V-ATPase axis in *Drosophila melanogaster*. ***Autophagy*** (2016).
- Christiansen A, Kringelum J, Hansen CH, Bøgh KL, Sullivan E, Patel J, Rigby N, Eiwegger T, Szépfalusi Z, **De Masi F**, Nielsen M, Lund O, and Dufva M.; High-throughput sequencing enhanced phage display enables the identification of patient-specific epitope motifs in serum. ***Scientific Reports*** (2015) 5:12913
- Jensen MK, Lindemose S, **De Masi F**, Reimer JJ, Nielsen M, Perera V, Workman CT, Turck F, Grant MR, Mundy J, Petersen M, Skriver K.; ATAF1 transcription factor directly regulates abscisic acid biosynthetic gene NCED3 in *Arabidopsis thaliana*. ***FEBS Open Bio***. (2013) Jul 29;3:321-7.
- Alibes A*, Nadra A*, **De Masi F**, Bulyk M, Serrano L, Stricher F; Using protein design algorithms to understand the molecular basis of disease caused by protein-DNA interactions: the Pax6 example. ***Nucleic Acids Research*** (2010) 38(21):7422-31
- Zhu C*; Byers, K*; Patton McCord, R*; Shi, Z; Berger, MF; Newburger, D; Saulrieta, K; Smith, Z; Shah, M; Radhakrishnan, M; Philippakis, AA; Hu, Y; **De Masi, F**; Pacek, M; Rolfs, A; Murthy, TVS;

LaBaer, J; Bulyk, ML; High-Resolution DNA Binding Specificity Analysis of Yeast Transcription Factors, ***Genome Research*** (2009) 19:556-566

- Neduva, V; Linding, R; Su-Angrand, I; Stark, A; **De Masi, F**; Gibson, TJ; Lewis, J; Serrano, L; Russell, RB; Systematic discovery of new recognition peptides mediating protein interaction networks. ***PLoS Biology*** (2005) (12):e405

Reviewer Commitments

- Nucleic Acids Research, Scientific Reports, Gene, Molecular and Cellular Proteomics, Molecular Biology, Evolution, Biotechniques and PLoS ONE.

Committees appointments

- DTU Bioinformatics member of the PhD Committee for DTU Life Science – **2016 to Present**
- Student representative at EMBL's PhD Committee - **2003**

Certifications, Awards and Honours

- uDTU: Education in University Teaching at DTU, Team 19 – **2011-2012**
- MGED9 Travel Award (funded by the National Human Genome Research Institute; USA) – **2006**
- CSHL/WT Interaction Networks conference: Winner of the 1st prize in poster competition – **2007**
- 3rd Annual Human Proteome Project Meeting: Winner of the 1st prize in poster competition - **2003**

Languages

- Mother tongues: Italian, French
- Fluent: Spanish, English
- Basic/Beginner: Danish, German