Vannini Alessandro, Ph.D.

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Personal Data

- Nationality: Italian and British (dual)
- Birth: August 20,1975. London, UK

Current Post

2019 (October) - present: Professor of Integrative Structural Biology at The Institute of Cancer Research (ICR), University of London, UK

2019 (September) - present: Director, Structural Biology Research Centre, Human technopole Foundation, Milan, Italy

Past Posts

2017 - 2019: Reader of Integrative Structural Biology at the University of London and Deputy Head, Division of Structural Biology, The Institute of Cancer Research (ICR), London, UK

2012 - 2017: Career Development Fellow (Tenure-Track Group Leader), Division of Structural Biology, The Institute of Cancer Research (ICR), London, UK

2006 - 2012: Post-doctoral fellow, Prof. Patrick Cramer's Lab, Gene Center LMU, Munich, Germany

2001 - 2006: Ph.D. fellow, IRBM (Merck Research Lab), Pomezia, Italy

Education

2006 - "Tor Vergata" University of Rome, Faculty of Medicine, Italy — Ph.D. in Biochemistry and Molecular Biology

2000 - "Terza Università" University of Rome, Italy — Master Degree in Biological Sciences, *summa cum laude*

Awards

- **SFRR Europe Leopold Flohe Award (2020)**

- **Wellcome Trust Investigator (2016)**
- **CR-UK Programme Foundation Award (2016)**
- **EMBO Young Investigator (2016)**
- **New Investigator Award BBSRC (2013)**
- **Römer-Prize of the LMU, category Research-associate (2010)**
- **Marie Curie Intra-European fellowship (2007)**
- **EMBO long-term fellowship (2006)**

Teaching Experience:

2002-2005 IRBM (Merck Research Lab), Pomezia, Italy — "X-Ray Crystallography as a Tool to Aid Pharmaceutical Research".
2006-2011 Gene Center LMU, Munich, Germany — Instructor at the "Structural Biology Practical Course"
2011 Gene Center LMU, Munich, Germany — Tutor of the "Strukturbiologie II" course
2018-present University College London, UK – "Integrated Structural Biology of Transcription". Lectures as part of the "Mechanisms of Molecular Machines" course

Grants

- MRC Project Grant: *"Molecular basis of tRNA splicing by the TSEN complex in health and disease"* - **£435,000 -** 01/2020-01/2023 (**PI**)
- Wellcome Trust Cryo-Electron Microscopy Equipment: "*A London consortium to establish a high resolution cryo-electron microscopy facility for research and training"* - **£3,000,000** -05/2017-04/2022 (**Co-PI**)
- Cancer Research-UK Programme Foundation Award: "*Understanding Brf2-dependent Transcription in Cancer: Structures Mechanisms and Potential for Intervention"* - **£1,460,000 -** 07/2016-06/2022 (**PI**)
- Wellcome Trust Investigator Award: "*Architectural Role of RNA Polymerase III Promoters and Associated Factors in Shaping and Organising the Human Genome"* – **£1,505,199 -** 06/2016-12/2021 (**PI**)
- BBSRC New Investigator Award: "*Yeast RNA polymerase III pre-initiation complex"* -**£700,000** - 08/2013-02/2018
- EU-Marie Curie Mobility Fellowship: "*Human Rpc5"* - **€183,500** - 05/2015-03/2017

Editorial Boards

The Biochemical Journal (since 2015)

Conference contributions

- **"45th FEBS Meeting" -** Ljubljana, Slovenia – July 2020 *(invited speaker)*

- **“FEBS/EMBO Lecture Course on Chromatin Proteomics”** – Crete, Greece - September 2019 *(invited speaker)*
- **"11th Bordeaux RNA Club Symposium” – IECB, Bordeaux** – June 2019 (*invited speaker*)
- **“Structural and molecular biology of the DNA damage response” –** CNIO, Madrid – May 2019 *(invited speaker)*
- **“The Complex life of RNA**” **–** EMBL, Heidelberg – October 2018
- **“Official opening of eBIC cryo-EM facility at Diamond Light source”** - Oxford, UK - September 2018 *(invited speaker)*
- **“31st European Crystallographic Meeting (ECM31)” –** Oviedo, Spain **–** August 2018 *(invited speaker)*
- **"International Conference on Transcription by RNA Polymerases I, III, IV, and V: OddPols 2018"** Toulouse, France **–** June 2018 *(invited speaker)*
- **AIC International Crystallographic School 2017 "Bridging the gap between cryo-EM and crystallography"** Pavia, Italy – September 2017 *(invited speaker)*
- **EMBO Workshop “Thiol Oxidation in Toxicity and Signalling”** Sant Feliu de Guixols, Spain – September 2017 *(invited speaker)*
- **“Integrative structural biology - 50th Course of the International School of Crystallography”** Erice, Italy – June 2017 *(invited speaker)*
- **Plenary lecture “Inauguration of the Römer-Forum of LMU, Ludwig-Maximilan University”** Munich, Germany – December 2016
- **“SKMB Gene Regulation Workshop 2016”** Lausanne, Switzerland – September 2016 *(invited speaker)*
- **“80th Harden Conference: Machines on Genes IV”** Macclesfield, UK – August 2016 *(invited speaker)*
- ***"*International Conference on Transcription by RNA Polymerases I, III, IV, and V: OddPols 2016*"*** *Ann Arbor, USA - June 2016 (invited speaker)*
- **“Integrated Analysis of Macromolecular Complexes and Hybrid Methods in Genome Biology – Winter School”** Ringberg, Germany – December 2015 *(invited speaker)*
- **"Total Transcription 2014"** Hinxton, UK - September 2014 *(invited speaker)*
- **"International Conference on Transcription by RNA Polymerases I, III, IV, and V: OddPols 2014"** Ann Arbor, USA - June 2014 *(invited speaker)*
- **"From Genome to Proteome"** Cambridge, UK - December 2012 *(invited speaker)*

List of Publications

1) Ferrari, R., de Llobet Cucalon, L. I., Di Vona, C., Le Dilly, F., Vidal, E., Lioutas, A., … Beato, M. (2019). TFIIIC Binding to Alu Elements Controls Gene Expression via Chromatin Looping and Histone Acetylation. Molecular Cell, S1097-2765(19)30798-1. Advance online publication. doi:10.1016/j.molcel.2019.10.020

2) Muwen K., Cutts E., Pan D., Beuron F., Kaliyappan T., Xue C., Morris E., Musacchio A., Vannini A., Greene E.C (2019). **Human condensin I and II drive extensive ATP–dependent compaction of nucleosome–bound DNA** doi: https://doi.org/10.1101/683540

3) Cutts E. and **Vannini A**. "Troubleshooting biGBac: a practical guide" (2018). **Protocols.io** dx.doi.org/10.17504/protocols.io.q3ydypw

4) Dergai, O., Cousin, P., Gouge, J., … **Vannini A**. and Hernandez N. "Mechanism of selective recruitment of RNA polymerases II and III to snRNA gene promoters. (2018) **Genes & Development**, *32*(9-10), 711–722.

5) Abascal-Palacios G., Ramsay E.P., Beuron F., Morris E and **Vannini A.** "Structural basis of RNA Polymerase III transcription initiation" (2018). **Nature,** (553), 301-306.

6) Ramsay E.P and **Vannini A.** "Structural rearrangements of the RNA polymerase III machinery during tRNA transcription initiation" (2017). **Biochimica et Biophysica Acta**. DOI: 10.1016/j.bbagrm.2017.11.005. [Epub ahead of print]

7) Jochem, L., Ramsay, E. P., and **Vannini, A.** "RNA polymerase I, bending the rules?" (2017) **EMBO J.** (36), 2664-2666.

8) Gouge J., Guthertz N., Dergai O., Kramm K., Abascal-Palacios G., Satia K., Cousin P., Hernandez N., Grohmann D. and **Vannini A.** "Molecular mechanisms of Bdp1 in TFIIIB assembly and RNA Polymerase III transcription initiation" (2017). **Nature Communications**, (8), 130.

9) Gouge J. and Vannini A. "New tricks for an old dog: Brf2-dependent RNA Polymerase III transcription in oxidative stress and cancer" (2017). **Transcription**, *DOI: 10.1080/21541264.2017.1335269*

10) Gouge J., Satia K., Guthertz N., Widya M., Thompson A., Cousin P., Dergai O., Hernandez N. and **Vannini A.** "Redox signaling by the RNA Polymerase III TFIIB-related factor Brf2" (2015). **Cell** (163), 1375–1387.

11) **Vannini A.** "A Structural Perspective on RNA Polymerase I and RNA Polymerase III Transcription Machineries" (2013) **Biochimica et Biophysica Acta**. (3-4) 258-264.

12) **Vannini A.** and Cramer P. "Conservation between the RNA polymerase I, II, and III transcription initiation machineries" (2012) **Mol. Cell**. (45) 439-446.

13) **Vannini A.***, Ringel R.*, Kusser A.G.*, Berninghausen O., Kassavetis, G.A and Cramer P. "Molecular basis of RNA polymerase III transcription repression by Maf1" (2010) **Cell**. (143) 59-70. *equal contribution

14) Beck K.*, **Vannini A.*,** Cramer P. and Lipps G. "The archaeo-eukaryotic primase of plasmid pRN1 requires a helix bundle domain for faithful primer synthesis" (2010) **Nucleic Acids Res.** (19), 6707–6718. *equal contribution.

15) Mohammed S., Lorenzen K., Kerkhoven R., van Brukelen B., **Vannini A**., Cramer P. and Heck A.J. "Multiplexed proteomics mapping of yeast RNA

polymerase II and III allows near-complete sequence coverage and reveals several novel phosphorylation sites. (2008) **Anal. Chem.** (10) 3584-92.

16) Cramer P., …. and **Vannini A**. “Structure of eukaryotic RNA polymerases”. (2008) **Annu. Rev. Biophys**. (37) 337-52.

17) Lorenzen K., **Vannini A**., Cramer P. and Heck A.J. “Structural biology of RNA polymerase III: mass spectrometry elucidates subcomplex architecture”. (2007) **Structure**. (10) 1237-45.

18) **Vannini A.,** Volpari C., Gallinari P., Jones P., Mattu M., De Francesco R., Steinkuhler C. and Di Marco S. "Substrate binding to histone deacetylases as shown by the crystal structure of the HDAC8-substrate complex". (2007) **EMBO Rep**. (9) 879-84.

19) **Vannini A.**, Volpari C., Filocamo G., Caroli Casavola E., Brunetti M., Renzoni D., Chakravarty P., Paolini C., De Francesco R., Gallinari P., Steinckuhler C and Di Marco S. ("Crystal structure of a eukaryotic Zn-dependent histone deacetylase, human HDAC8, complexed with a hydroxamic acid inhibitor". 2004) **Proc. Natl. Acad. Sci. U.S.A**. (101) 15064-9.

20) **Vannini A**., Volpari C. and Di Marco S. "Crystal structure of the quorum-sensing protein TraM and its interaction with the transcriptional regulator TraR". (2004) **J. Biol. Chem**. (23) 24291-6.

21) **Vannini A.,** Volpari C. and Di Marco S. "Crystallization and preliminary X-ray diffraction studies of the quorum-sensing regulator TraM from Agrobacterium tumefaciens" (2004) **Acta Cryst**. (D60) 146-148.

22) Nardella C., Lahm A., Pallaoro M., Brunetti M., **Vannini A.** and Steinkuhler C. "Mechanism of activation of human heparanase investigated by protein engineering". (2004) **Biochemistry**. (7) 1862-73.

23) **Vannini A.,** Volpari C., Gargioli C., Muraglia E., Cortese R., De Francesco R., Nedderman P. and Di Marco S. "The crystal structure of the quorum sensing protein TraR bound to its autoinducer and target DNA". (2002) **EMBO J**. (21) 4393-4401.

24) **Vannini A.,** Volpari C., Gargioli C., Muraglia E., De Francesco R., Nedderman P. and Di Marco S. "Crystallization and preliminary X-ray diffraction studies of the transcriptional regulator TraR bound to its cofactor and to a specific DNA sequence". (2002) **Acta Cryst**. (D58) 1362-1364.

25) Orsatti L., Bonelli F., Volpari C., **Vannini A.,** Neddermann P. and Di Marco S. "Determination of the Stoichiometry of Non-Covalent Complexes using Reverse Phase High Performance Liquid Chromatography Coupled with Electrospray Ion Trap Mass Spectrometry". (2002) **Anal. Biochem**. (309) 11-18.

26) Baroni S., Mattu M., **Vannini A.,** Fasano M. and Ascenzi P. "Effect of ibuprofen and warfarin on the allosteric properties of human serum albumin: an EPR study." (2001) **Eur. J. Biochem**. (23) 6214-20.

27) Fasano M., Baroni S., **Vannini A.,** Ascenzi P. and Aime S. "Relaxometric characterization of human hemalbumin." (2001) **J. Biol. Inorg. Chem**. (6) 650-658.

28) **Vannini A.**, Mattu M., Coletta M., Fasano M., and Ascenzi P. "Effect of bezafibrate and clofibrate on the heme-iron geometry of ferrous nitrosylated heme-human serum albumin: an EPR study." (2001) **J. Inorg. Biochem**. (84) 293-296.