

**Jamie Hackett**

Group Leader

---

**Academic Appointments:**

- 2016- Group Leader, European Molecular Biology Laboratory (EMBL), Epigenetics and Neurobiology Unit, Rome, Italy  
Joint appointment with Genome Biology Unit, EMBL Heidelberg, Germany.  
*Genome regulatory mechanisms and intergenerational inheritance*

**Postdoctoral Training:**

- 2011-2016 Postdoctoral Fellow with Prof. Azim Surani, Gurdon Institute, University of Cambridge, UK  
*Epigenetic (re)programming and cell-fate decisions during early development*

**Predoctoral Training:**

- 2006-2010 Predoctoral Fellow with Prof. Richard Meehan, Institute for Genetics and Molecular Medicine, University of Edinburgh, UK  
*Function of DNA methylation in transcriptional control*
- 2005-2006 Masters Student with Prof. Bob Hill, Prof. Prof. Javier Caceres and Prof. Richard Meehan, MRC Human Genetics Unit, University of Edinburgh, UK

**Research Overview:**

Our research investigates the fundamental principles of epigenetic regulation, from molecular mechanisms to organismal responses. The key focus is to understand the potential for (acquired) epigenetic states to be transmitted through mitosis and/or meiosis to influence progeny phenotype. We integrate environmental perturbations and precision (epi)genetic editing technologies to model the impact of induced epigenomic changes on intergenerational health and disease susceptibility. We are also interested in the understanding the underlying mechanisms by which normal or aberrant chromatin states functionally participate in genome regulation and development. Key questions include:

- *How does the environment (gut microbiome) influence intergenerationally heritable factors in germ cells*
- *How does normal or altered epigenetic programming influence development?*
- *What is the gene regulatory function of distinct chromatin states across genetic contexts?*

**Selected Publications:**

Gretarsson K & Hackett JA<sup>†</sup> (2020). *Dppa2* and *Dppa4* counteract *de novo* methylation to establish a permissive epigenome for development. ***Nature Structural & Molecular Biology***

Hackett, JA<sup>†</sup>... Surani, A<sup>†</sup>. (2018) Tracing the transitions from pluripotency to germ cell fate with CRISPR screening. ***Nature Communications***

Tang WW... Hackett JA, Chinnery PF, Surani MA. (2015). A Unique Gene Regulatory Network Resets the Human Germline Epigenome for Development. ***Cell***.

Hackett, JA & Surani A. (2014) Regulatory Principles of Pluripotency: From the Ground State Up. ***Cell Stem Cell***,

Hackett, JA... Surani, A. (2013) Germline DNA demethylation dynamics and imprint erasure through 5-hydroxymethylcytosine. ***Science***

Hackett, JA & Surani, A. (2013) Beyond DNA: Inheritance of parental methylomes. ***Cell***.