



## Dr James Godwin

Dr James Godwin is an independent research fellow in the Rosenthal Group and a recipient of the 2008 Newcomb Cleveland Prize for his work on the molecular basis of nerve dependence in salamander regeneration. His last appointment was at University College in London (UCL) as a research fellow in the Laboratory of Jeremy Brockes, where he spent five years investigating the mechanisms of salamander regeneration. His PhD was obtained at Melbourne University in the Immunology Research Centre based at St Vincent's Hospital. This work examined cross species immune mechanisms and focussed on molecules aimed at limiting immune rejection.

His current research program looks at the immunological pathways in amphibians (Axolotls) that promote regeneration and limit the scarring response.



His research is focused on finding the immunological molecules capable of extending the regenerative capacity in mammals using both molecular and transgenic technologies.

### Research interests

Salamanders are unique in that they can regenerate a vast number of clinically relevant body structures as an adult, including their limbs, tails, jaws, sections of the heart, ocular tissues, and parts of the brain and spinal cord. Unlike humans, they are resistant to scarring and the way their immune system deals with injury favours a regenerative program that faithfully replaces the damaged tissues, rather than employ the inflammation, fibrosis and scarring that usually occurs in mammals. I am interested in the molecular events during the wounding response in salamanders (Axolotls) and aim to uncover the molecular switches that can direct mammalian wound healing down a more regenerative ("scarless") pathway. Salamander transgenic technology and genomic tools have only recently become available, meaning that for the first time we are presented with a unique opportunity to tackle the important regeneration questions with modern scientific tools in a wide range of important clinically relevant contexts.



## Career snapshot

### Undergrad:

The University of Melbourne,  
Bachelor of Science (Honours) BSc (Hons)

### Postgraduate

The University of Melbourne  
Department of Medicine,  
St Vincent's Hospital.  
Doctor of Philosophy, PhD (Full time)

### Positions Held

Postdoctoral Research Fellow: Jeremy Brockes Laboratory, Department of Biochemistry and Molecular Biology, University College London. UK.

Research Assistant: Neuromuscular Research Institute. St. Vincent's Hospital. Melbourne Victoria.

Research Assistant: Department of Anatomy and Cell Biology. (Dziadek Lab). Melbourne University.

## Key publications

- Anoop Kumar\* and James W. Godwin\*, „*Preparation and culture of limb blastema stem cells from regenerating larval and adult salamanders*” **CSH Protocols**. In Press
- James W. Godwin<sup>1</sup>\*, Anoop Kumar<sup>1</sup>\* Phillip B. Gates,<sup>1</sup> A. Acely Garza-Garcia,<sup>2</sup> Jeremy P. Brockes. *Molecular basis for the nerve dependence of limb regeneration in an adult vertebrate*. **Science**: 2007 November 2;318(5851):772–7.
- James W. Godwin and Jeremy P. Brockes. *REVIEW: Regeneration, tissue injury and the immune response*. **Journal of Anatomy** (2006): 209 (4), 423–432.
- James W. Godwin, Nella Fiscaro, Anthony J. F. d'Apice, Peter J. Cowan “*Towards endothelial cell-specific transgene expression in pigs: characterization of the pig ICAM-2 promoter*” **Xenotransplantation** (2006) 13 (6), 514–521.
- Godwin JW Cowan PJ, D'apice AJ. *Characterization of Pig Intercellular Adhesion Molecule-2 and its Interaction with Human LFA-1*. **American Journal of Transplantation** (2004) 4 (4), 515–525.

\* Equal first author

## Awards

AAAS – “Newcomb Cleveland prize” (US\$25,000) for best Science research paper of 2007–2008.

## Contact details

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*Abystoma mexicanum* (The Axolotl)