



**Canadian Arthritis Network  
International Partnership Initiative**

**International Research & Training Program  
LABORATORY/CLINIC PROFILE**

**Contact information of the principal investigator**

<b>Name:</b>	Jane E. Aubin, Ph.D.
<b>Dept and Institution:</b>	Dept. of Molecular and Medical Genetics, University of Toronto
<b>Complete mailing address:</b>	Room 6230 Medical Sciences Building 1 King's College Circle Toronto, Ontario M5S 1A8
<b>Phone:</b>	416-978-4220
<b>Email:</b>	jane.aubin@utoronto.ca

**Please indicate if you are member or affiliate of one or more of the following  
International Partnership Initiative organizations:**

- AO Foundation – Biotechnology Advisory Board, Switzerland
- Arthritis Foundation, USA
- Arthritis Research Campaign, UK
- Canadian Arthritis Network, Canada
- Japan Society for the Promotion of Science, Japan
- Nuffield Foundation Oliver Bird Rheumatism Program, UK

**International Research & Training Program Opportunity**

**Please indicate which of the following international opportunities would be  
available at your laboratory/clinic.**

- Training Elective Rotation
- Research Mini-sabbatical
- Industry Training Rotation



**The International Research & Training Program will be available for trainee elective rotations and investigator mini-sabbaticals that commence on or before March 31, 2009. If you have any preferences regarding the dates when you can host an international trainee or investigator, please indicate this below.**

<b>Visit Length</b> (please indicate start and end dates if known):	Any mutually agreeable time
---	-----------------------------

**Please provide ten key words and a brief description of the research currently being conducted in your laboratory/clinic, including descriptions of any specialized equipment, methods or technologies employed at your facility.**

**10 key words**

1. mesenchymal stem cells
2. osteoblasts
3. chondrocytes
4. cell and molecular biology
5. differentiation
6. regulation of skeletal development
7. regulation of gene expression
8. mouse models
9. ENU mutagenesis
10. ERRs/nuclear receptors

**Brief description** (up to ½ page)

Research in my laboratory is focused on mesenchymal stem cells, skeletal development and regulation of the coupling between proliferation and differentiation in osteoblast and chondrocyte development. Our work addresses both how to characterize and how to control self-renewal, proliferation, differentiation and plasticity of the stem cells and more mature progenitor populations. We use a multifaceted approach, which includes cell and molecular biology, gene expression profiling, cell sorting and FACS analysis, immunocytochemistry and mouse and rat models. Mouse models include new models of human bone and joint disease that are generated by chemical mutagenesis and characterized by a battery of phenotypic and genetic screens to identify new gene mutations affecting the skeleton. One regulatory pathway being investigated is that of the orphan nuclear receptor estrogen receptor-related receptor alpha (ERR $\alpha$ ) whose activity markedly influences bone and cartilage formation and integrity in health and disease.

**Key publications** (maximum 5 publications)

Bonnelye E, Kung V, Laplace C, Galson DL, and Aubin JE. Estrogen receptor related receptor  $\alpha$ , ERR $\alpha$ , impinges on the estrogen axis in bone: potential function in osteoporosis. *ENDOCRINOLOGY*. **143**:3658–3670, 2002.



- Liu F, Malaval L and Aubin JE. Global amplification PCR reveals novel transitional stages in osteoprogenitor cells undergoing differentiation in vitro. *J. CELL SCI.* **116**: 1787-1796, 2003.
- Zhang S, Chan M and Aubin JE. 1,25(OH)<sub>2</sub> vitamin D<sub>3</sub> alters the fate choice of multipotential mesenchymal progenitor cells. *J. MOL. ENDOCRINOL.* **36**:425-433, 2006
- Falconi D, Oizumi K and Aubin JE. Leukemia inhibitory factor influences the fate choice of mesenchymal progenitor cells. *STEM CELLS.* **25**:305-312, 2007.
- Bonnelye E, Zirngibl R, Jurdic P and Aubin JE. Estrogen receptor-related receptor alpha is a regulator of Sox9 and is involved in cartilage formation and integrity. *ENDOCRINOLOGY.* **148**:1195-1205, 2007.