Sylvie Renaud, PhD

A. Professional Preparation

SUPELEC, Paris	Physics	Ingénieur (M.S.)	1986
University of Bordeaux	Electronic Engineering	Ph.D.	1991
University of Bordeaux	Electronic Engineering	HDR (Tenure)	2001

B. Academic/Professional Appointments

2002- Tenure Professor, Institut Polytechnique de Bordeaux, Bordeaux, France.
1993-2002 Associate-Professor, ENSEIRB, Bordeaux, France.
1991-1993 Postdoctoral Associate, Brandeis University, MA, USA.
1986-1991 Assistant Professor, ENSEIRB, Bordeaux, France.

C. Publications

Publications Most Closely Related to the Proposed Project (* indicates mentored student or post-doc)

Indiveri, G, B Linares-Barranco, T Julia Hamilton, A Van Schaik, R Etienne-Cummings, T Delbruck, S-C Liu, P Dudek, P Häfliger, **S Renaud** et al. Neuromorphic silicon neuron circuits. Frontiers in neuroscience, 1-23, 2011

Lang, J, B Catargi, **S Renaud**, M Raoux, G Charpentier, Y Bornat. Sensor for measuring the activity of beta-pancreatic cells or of islets of Langerhans, manufacture and use of such a sensor. WO/2011/086105 33, 2011

Renaud, S, J Tomas, N Lewis, Y Bornat, A *Daouzli, M Rudolph, A Destexhe, S Saïghi. PAX: A mixed hardware/software simulation platform for spiking neural networks. Neural Networks, 905-916, 2001

Levi, T, N Lewis, S SaÏghi, J Tomas, Y *Bornat, **S Renaud**. Neuromimetic Integrated Circuits.
dans VLSI Circuits for Biomedical Applications, Krzysztof Iniewski (Ed.), 241-264, 2008

Zou, Q., Y *Bornat, S *Saighi, J Tomas, **S Renaud**, A Destexhe. Analog-digital simulations of full conductance-based networks of spiking neurons. Network: Computation in Neural Systems, 17-3, 211-233, 2006

Other Significant Publications

Raoux, M, Y Bornat, A *Quotb, B Catargi, **S Renaud**, J Lang. Non-invasive long-term and real-time analysis of endocrine cells on micro-electrode arrays. Journal of Physiology, 590(5):1085-1091, 2011

Chen, H, S Saïghi, L *Buhry, **S Renaud**. Real-Time Simulation of Biologically Realistic Stochastic Neurons in VLSI. IEEE Transactions on Neural Networks, 21(9):1511-1517, 2010

Levi, T, N Lewis, S SaÏghi, J Tomas, Y *Bornat, **S Renaud**. Neuromimetic Integrated Circuits. VLSI Circuits for Biomedical Applications, Krzysztof Iniewski (Ed.), 241-264, 2008

Renaud, S, G Le Masson, *L Alvado, S *Saighi, J Tomas. A neural simulation system based on biologically-realistic electronic neurons , Information Sciences, 161(1-2):57-69, 2004.

Le Masson, G, **S Renaud**, D Debay, T Bal. Feedback inhibition controls spike transfer in hybrid thalamic circuits, Nature, 417:854-858, 2002

D. Synergistic Activities

1. I participated in 6 EU projects since 2001 in the Future Emerging Technologies calls of FP5, FP6, FP7. In 5 out of 6, I was the scientist in charge for our laboratory acting as a full partner. All projects were multi-disciplinary, with partners from Engineering, Computer Science, Neuroscience. I am now experienced in running my team in multi-disciplinary projects, and international collaboration.
2. I am the coordinator of the Erasmus Integrated Program for doctoral students Belem. Belem gathers in Bordeaux every year 15-20 european PhD students, which doctoral project is related to Bioemedical electronic engineering. Through this program, we expect to offer these students a more integrative view of their research field, and help them join the network of international researchers in Bioemedical electronic engineering. This is an original initiative in the context of French doctoral schools in Engineering, where PhD training is not yet as developed as in other countries.
3. I am co-inventor on an International Patent “Sensor for measuring the electrical activity of beta-pancreatic cells or islets”: together with biologists and clinicians (endocrinology), we developed a device for automated functional islet screening within the granting period for pre-transplantation

quality tests, drug and toxicology tests, real-time analysis during regeneration of islet cells from stem cells. We will extend this device to an implantable bio-microelectronic hybrid sensor of insulin demand in therapeutic applications

4. I was selected to participate to the « Expert consultation workshop » for preparing the EU FP7 call Neuro-Bio-ICT in 2011 (ICT-FET Proactive Initiatives). In 2010, I was invited to the « US-EU Workshop on Informatics for Bio-Inspired Design: Reverse Engineering of the Human Brain» organized jointly by the European Science Foundation (ESF), US National Science Foundation (NSF), and US Air Force Office of Scientific Research (AFOSR). The goal of this workshop was to provide consolidated strategic recommendations for the benefit of funding agencies, industry, research organisations, and academia. This included foresight for research planning, promotion and dissemination of knowledge, formulation of standards and best practices.
5. I am a funding member of the BIONICS french consortium, focusing on "embedded electronics systems for health applications", with researchers from 3 CNRS research networks. In BIONICS we identified research activities in France related to that research field, and designed a roadmap for its perspective. BIONICS was labeled and funded in 2012 by the Interdisciplinary Mission of CNRS as a networking action supporting multi-disciplinary research in sensory rehabilitation.

E. Collaborators & Other Affiliations

(a) Collaborators over last 48 months:

(CNRS Gif-sur-Yvette, France) Alain Destexhe; (Delft U, Netherlands) Wouter Serdijn; (ETH Zurich, Switzerland) Giacomo Indiveri; (Florida International U, FL, USA) Ranu Jung; (Georgia Tech, GA, USA) Paul Hasler; (Heidelberg U, Germany) Karl-Heinz Meier; (IIT Genova, Italy) Michela Chiappalone; (Porto U, Portugal) Jose Machado da Silva; (UPMC, Paris, France) Patrick Garda; (Thsin Hua U, Taiwan) Hsin Chen.

(b) Graduate Advisors and Postdoctoral Sponsors:

Graduate: Pr Ph. Marchegay, PhD (retired from U. Bordeaux, France);
Postgraduate: Dr Larry Abbott (currently at Columbia U., New York).

(c)Thesis Advisor and Postgraduate-Scholar Sponsor:

Students Graduated (degree, current location): Adam Quotb (PhD, Post Doctoral researcher at IIT Genova, Italy); Adeline Zbrzeski (PhD, Florida International U); Laure Buhry (PhD, Postdoctoral researcher at INRIA Nancy-Grand Est, INRIA); Bilel Belhadj (PhD, Post Doctoral researcher at CEA Grenoble); Guilherme Bontorin (PhD, Postdoctoral researcher at LIRMM); Adel Daouzli (PhD, Associate Professor at U. Lyon); Yannick Bornat (PhD, Assistant Prof. at IPB, Bordeaux U); Sylvain Saighi (PhD, Assistant Prof. at IUT, Bordeaux U); Ludovic Alvado (PhD, Senior Engineer at NXP, Caen); Vincent Douence (PhD, Senior Engineer, USA); Arnaud Laflaquière (PhD, Senior Engineer at STMicroelectronics, Grenoble); Denis Dupeyron (PhD, Senior Engineer, Otologics, USA). **Current:** François Rummens (PhD, Bordeaux U); Florian Kolbl (PhD, Bordeaux U).

Postgraduate-Scholar Sponsor (since 2003) (current location):

Fabrice Morin (Group Manager, Tecnalia, Spain); **Current:** Quang Vinh N'Guyen (PostDoc, Bordeaux U).