

Curriculum Vitae

Name: Bacabac, Rommel G.
Date and place of birth: 29 June 1969, Manila, Philippines



PhD Studies:

2001-2005 Project: “Bone cell mechanosensitivity and microgravity”
Hosting institution: Dept Oral Cell Biology
ACTA-Universiteit van Amsterdam & Vrije Universiteit
The Netherlands
Funding: SRON Netherlands Institute for Space Research
Project nr. MG-055
Promotors: prof.dr. Jenneke Klein-Nulend
prof.dr. Rob M. Heethaar
Co-promotors: dr.ir. Theo H. Smit
dr. Jack J.W.A. Van Loon

Postdoctoral Research:

2005-2006 Project: “Mechanosensitive cells in 3D environment
and microgravity”
Hosting institution: Dept Oral Cell Biology
ACTA-Universiteit van Amsterdam & Vrije Universiteit
The Netherlands
Head of project: Prof. Jenneke Klein-Nulend
Head of department: Prof. Vincent Everts
Collaborators:
Dept Physics and Medical Technology: dr.ir. Theo H. Smit
Dutch Experiment Support Center: dr. Jack J.W.A. Van Loon
Dept Physics of Complex Systems: Prof. Christoph F. Schmidt
Dept Theoretical Physics: Prof. Fred C. MacKintosh

Education:

Physics and Mathematics:

- 2001 Vrije Universiteit Amsterdam, The Netherlands
MS Experimental Physics
- 1998 University of San Carlos (USC), Cebu City, Philippines
BS Physics
- 1992-1993 University of San Carlos (USC), Cebu City, Philippines
(summer) Units for MS Mathematics
- 1992-1993 Ateneo de Davao University, Davao City, Philippines
Advanced Mathematics courses

Philosophical disciplines:

- 1993-1994 Ateneo de Davao University, Davao City, Philippines
Units for MA in Religious education
- 1991-1993 Regional Major Seminary, Davao City, Philippines
Theological studies
- 1990 Christ the King Mission Seminary, Quezon City, Philippines
AB Classical Philosophy (with distinction: Magna cum laude)

High School:

- 1982-1986 Christ the King Mission Seminary, Quezon City, Philippines
(with highest honors: Valedictorian)

Awards:

- 2003 5th International Bone Fluid Flow Workshop, Ohio, USA
BFF Experimental Award of Excellence
- 2004 Meeting of the Netherlands Institute for Dental Sciences
Poster award
- 2005 7th International Bone Fluid Flow Workshop, New York, USA
Travel Award

Grant:

2002 Funded by the Physics Development Project
PDP grant # PHL-146

“Development of an optical tweezer setup”: Funds were received by RG Bacabac via the Center for International Cooperation (CIS) in the Netherlands, to assemble and build a double-laser optical tweezer setup in an inverted microscope system for research on the microrheology of mechanosensitive cells, and applications on soft matter physics. This project was carried out in close collaboration of the Dept Physics of Complex Systems, Vrije Universiteit and the Dept Oral Cell Biology, ACTA-Universiteit van Amsterdam and Vrije Universiteit.

Publications:

Bacabac RG, Smit TH, Cowin SC, Van Loon JJWA, Nieuwstadt FTM, Klein-Nulend J: Dynamic shear stress in parallel-plate flow chambers. *Journal of Biomechanics* 38: 159-167, 2005.

Bacabac RG, Smit TH, Mullender MG, Dijcks SJ, Van Loon JJWA, Klein-Nulend J: Nitric Oxide production by bone cells is fluid shear stress rate dependent. *Biochemical and Biophysical Research Communications* 315:823-829, 2004.

Bacabac RG, Smit TH, Mullender MG, Van Loon JJWA, Klein-Nulend J: An initial stress-kick is required for the fluid shear stress-induced activation of bone cells. *Annals of Biomedical Engineering* 33(1):104-110, 2005. (manuscript based on: 5th International Bone Fluid Flow Workshop 2003- “BFF Experimental Award of Excellence Abstract Presentation”, Cleveland, Ohio, USA).

Bacabac RG, Smit TH, Heethaar RM, van Loon JJWA, Pourquie MJMB, Nieuwstadt FTM, Klein-Nulend J: Characteristics of the parallel-plate

- flow chamber for mechanical stimulation of bone cells under microgravity. *Journal of Gravitational Physiology* 9:P181-P182, 2002.
- Bacabac RG, Van Loon JJWA, Smit TH, Klein-Nulend J: Stochastic resonance in rapid bone cell response to fluid shear stress. (submitted).
- Bacabac RG, Smit TH, Van Loon JJWA, Zandieh Doulabi B, Helder M, Klein-Nulend J: Bone cell responses to high-frequency vibration stress: does the nucleus oscillate within the cytoplasm? (submitted).
- Bacabac RG, Smit TH, Van Loon JJWA, Klein-Nulend J: Rapid nitric oxide production by bone cells in response to mechanical vibration. *Journal of Gravitational Physiology* (in press).
- Bacabac RG, Mizuno DS, Smit TH, Van Loon JJWA, Schmidt CF, MacKintosh FC, Klein-Nulend J: Microrheology of mechanosensitive cells (manuscript in preparation).
- Klein-Nulend J, Bacabac RG, Veldhuijzen JP, Van Loon JJWA: Microgravity and bone cell mechanosensitivity. *Advances in Space Research* 32(8):1551-1559, 2003.
- Klein-Nulend J, Bacabac RG, Van Loon JJWA, Veldhuijzen J: Botverlies door gewichtsloosheid: Raakvlakken met osteoporose. *Osteoporose Journaal* (in press).
- Klein-Nulend J, Bacabac RG, Mullender MG: Mechanobiology of bone tissue. *Pathologie Biologie* (in press).
- Mullender M, Dijcks SJ, Bacabac RG, Semeins CM, Klein-Nulend J: The effect of mechanical loading on MC3T3-E1 cells is modulated by flow characteristics (submitted).
- Klein-Nulend J, Bacabac RG, van Loon JJWA: Botverlies door gewichtloosheid: raakvlakken met osteoporose. *Nederlands Tijdschrift voor Calcium- en Botstofwisseling* 8(29):62-65, 2005.
- Klein-Nulend J, Vatsa A, Bacabac RG, Tan DS, Smit TH: The role of osteocytes in bone mechanotransduction. *Current Opinion in Orthopaedics* 16:316-324, 2005.

Klein-Nulend J, Bacabac RG, Vatsa A, Tan SD, Smit ThH, Van Loon JJWA:
Modulation of gene expression in bone cells during strain-adapted bone
remodelling. *Journal of Gravitational Physiology* (in press).

International meetings:

- 2001 3rd NL-Gravity and Astrobiology Symposium, Amsterdam, The Netherlands (oral presentation).
- 2002 4th Bone Fluid Flow Meeting—Bone Fluid Flow, Adaptation, and Regeneration, Amsterdam, The Netherlands (poster presentation).
- 2002 8th European Symposium on Life Sciences, 23rd Annual International Gravitational Physiology Meeting, Stockholm, Sweden (oral presentation).
- 2002 Advanced School and Workshop on “Bone Mechanics – Mathematical and Mechanical Models for Analysis and Synthesis”, Lisbon, Portugal (oral presentation).
- 2003 49th Annual Meeting, Orthopaedic Research Society, New Orleans, Louisiana, USA (oral presentation).
- 2003 24th Annual International Gravitational Physiology Meeting, Santa Monica, California, USA (oral presentation).
- 2003 European Low Gravity Research Association (ELGRA) Biennial Meeting, Munich, Germany (oral presentation).
- 2003 Biology and Physics at Interfaces, From SingleMolecules to Cells, Jülich, Germany (poster presentation).
- 2003 5th International Bone Fluid Flow Workshop, Cleveland, Ohio, USA (oral presentation: “BFF Experimental Award of Excellence Abstract Presentation”).
- 2004 14th European Society of Biomechanics Conference, ‘s-Hertogenbosch, The Netherlands (oral presentation).

- 2004 50th Annual Meeting, Orthopaedic Research Society, San Francisco, California, USA (oral presentation).
- 2004 American Society of Gravitational and Space Biology Meeting, Brooklyn, NY, USA (poster presentation).
- 2005 51st Annual meeting of the Orthopaedic Research Society, Washington, D.C., MD, USA (oral presentation).
- 2005 International Society of Gravitational Physiology (ISGP) Joint Life Science Conference, Cologne, Germany (oral presentation).
- 2005 7th International Bone Fluid Flow Workshop *Translational Bone Fluid Flow*, New York City, NY, USA (oral presentation).
- 2005 45th American Society for Cell Biology Annual Meeting, San Francisco, CA, USA (poster presentation).

Professional societies:

Interuniversitaire Onderzoeksschool Tandheelkunde

The Dutch Society for Calcium and Bone Metabolism

American Society for Gravitational and Space Biology

European Low Gravity Research Association

Samahang Pisika ng Pilipinas