# Curriculum Vitae

**PERSONAL INFORMATION**

Marchal Kathleen; Date of birth: 30/10/1972;

URL for web site: http://bioinformatics.psb.ugent.be/DBN/home

http://scholar.google.nl/citations?user=MAjGtncAAAAJ&hl=nl;

<http://www.researcherid.com/rid/B-5001-2013>

**HIGHER EDUCATION**

* 10/1990 - June 1995: Undergraduate studies Bioscience Engineering. KU Leuven, Belgium.
* 10/1998 – aggregaat biologie
* 11/1999: PhD: The O2 paradox of *Azospirillum brasilense* under diazotrophic conditions, Faculty of Bioscience Engineering, KU Leuven, Belgium (topic microbial molecular biology, supervisor: Prof. J. Vanderleyden

**CURRENT POSITION(S)**

* 01/09/2011- (100%): Associate Professor, Dept of Plant Biotechnology and Bioinformatics, Faculty of Sciences; Dept of Information Technology (IDLab, IMEC), Faculty of Engineering, Ghent University.
* 2015-2017 Extraordinary professor, Faculty of Science/ Department of Genetics/ University of Pretoria/ South Africa

**PREVIOUS POSITIONS**

* 01/10/1999-30/09/2004: Postdoctoral researcher, Dept. of electrical engineering (ESAT), Faculty of Engineering Science, KU Leuven, Belgium
* 01/10/2002-30/09/2014: Extraordinary professor, Dept. M2S, Faculty of Bioscience Engineering, KU Leuven, Belgium
* 01/10/2004-30/09/2008: Assistant professor (100%), Dept. M2S, Faculty of Bioscience Engineering, KU Leuven, Belgium
* 01/10/2008- 31/08/2011: Associate professor (100%), Dept. M2S, Faculty of Bioscience Engineering, KU Leuven, Belgium
* 31/08/2011-2014(20%): Associate professor, Dept. of Microbial and Molecular Systems (M2S), Faculty of Bioscience Engineering, KU Leuven

**FELLOWSHIPS AND AWARDS**

* 01/10/1995-30/09/1999: FWO aspirant fellowship, Dept. M2S, KU Leuven
* 01/10/2001-30/09/2004: FWO postdoctoral fellowship, Dept. of electrical engineering, KU Leuven
* DSM award for PhD research, year: 2000, amount: 1250 Euro
* Two yearly Siemens award. Medical bioinformatics: interdisciplinary crossroads, 2002, 7000 euro.

**SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

* Number of **PhDs** supervised as main promotor: 23
* Number of **PhDs** supervised as copromotor: 57
* Number of **PhDs** currently under supervision: 3 as main promotor and 4 as copromotor
* Number of **postdocs** I have supervised: K. Engelen (2004-2012), P. Monsieurs (2007), C. Fierro (2008-2015), A. Herrada (2011-2012), J. Van den Eynden (2013-2015), D. De Maeyer (2015-2016), L. Verbeke (2017-2020).

**TEACHING ACTIVITIES**

*As assistant/associate professor KU Leuven*

2006– 2013 Bachelor in Bioscience Engineering: KU Leuven Bioinformatica (4ECTS, 39 h)

2008 – 2011 Master of Science in Bioinformatics: KU Leuven, Bioinformatics: High-Throughput Analysis (2.33 ECTS, 18h); Bio-informatics: Structural and Comparative Genomics (2 ECTS, 13 h); Applied Statistical Methods (2.5 ECTS, 25 h);

2008 – 2011 Master in Bioscience Engineering: KU Leuven, Bioinformatica en genoomtechnologie (1.5 ECTS, 13h); Seminarie cel- en gentechnologie (1.5 ECTS, 3h);

*As associate professor UGent*

2013- Bachelor of Science in Biochemistry and Biotechnology, Bio-informatica I (2ECTs)

2013- Master Science in Biochemistry and Biotechnology, Master of Science in Bioinformatics Biostatistics (1.5ECTs)

2015 Master Science in Bioinformatics, Introduction to Bioinformatics (2 ECTs)

2015- Master Science in Bioinformatics, Integrative Biology (3 ECTs)

2015 Master Science in Bioinformatics, Capita Selecta (6 ECTs)

*Other*

ICES: Institute for Continuing Education in Science, Universiteit Gent, 2001, 2003, 2006 Module : Bioinformatics, (6 u), Module : Biostatistics (6u)

b) in the framework of [development aid](http://nl.bab.la/woordenboek/engels-nederlands/development-aid) (VLIR collaboration between Flanders and Cuba (www.uclv.edu.cu)): Bioinformatics course (19/03/05-4/04/05 and 02/12/06-12/11/06 Santa Clara)

**INSTITUTIONAL RESPONSIBILITIES**

2014-2011 Member of the Faculty Committee (Fac of Bioscience Engineering), KU Leuven/ Belgium

2008-2011 Chair of the Educational Committee of the Master of Science in Bioinformatics; KU Leuven

2011 Responsible for establishing the Master of Science in Bioinformatics; UGent

2015-… Member of the Faculty Committee (Fac of Sciences, Ghent University)

2015-… Chair of the Educational Committee of the Master of Science in Bioinformatics; Ghent University

**COMMISSIONS OF TRUST**

*International reviewing:*

Member of the evaluation committee of the research outputs of Professor VB Bajic, University of the Western Cape;

2008 Reviewer for ISF (Israel Science Foundation), FIRST Program;

2010 Reviewer for BBSCR 2010 research grant (UK);

2011, 2012 Review board of Inserm, ATIP Avenir grants (France);

2013 Review of ERACAPs project (EU),

2017 Swiss National Science Foundation (cancer related projects).

2017 Dutch Cancer Society (KWF) (cancer related projects).

2017 Personalized Health and Related Technologies ETH (Switserland)

2018 Reviewer for ISF (Israel Science Foundation), FIRST Program (cancer related)

*National reviewing:*

2006, 2010: Reviewer for IWT grants (Belgium)

2014-1019: Member of the **FWO expert panel** **BIO1** (the major Flemish funding agency)

2013: member of the evaluation board of tenure positions at the ULiege

2014: member of the evaluation board of tenure positions at the KU Leuven, U Antwerp

2015: member of the evaluation board of tenure positions at the Ghent University

2016: member of the evaluation board of tenure positions at the KU Leuven

2016, 2017 Wetenschappelijke commissie WIV-ISP

Member of the examination commission of external PhD students (15)

**EDITORIAL BOARD MEMBER**

Associate editor: BMC Bioinformatics, BMC Release Notes, Peer J, Microorganisms, Journal of Integrated Omics

**INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES**

* “Condition-dependent Combinatorial control in E. coli”. 2nd International Workshop on Bioinformatics (Cuba-Flanders) 2008, Santa-Clara February 5-7. Invited speaker.
* In silico search for new potential typing targets. 8th International meeting on microbial epidemiological markers, Zakopane Poland, May 14-17, 2008. Invited speaker.
* 4th IECA meeting, Cambridge, UK, September 24-17, 2008. Invited speaker.
* Reconstructing transcriptional networks in micro-organisms Workshop on “bacterial regulatory networks: Baeza (Spain), 12-14 November 2009. Invited speaker.
* 5th IECA meeting, Mexico, December 24-17, 2011. Invited speaker.
* International Conference on Microbiology (VAAM 2013), March 10-13, 2013, Bremen, Keynote lecture.
* Workshop of Practical Theories for Exploratory Data Mining, IEEE International Conference on Data Mining, December 10, 2012, Brussels, Keynote lecture.
* 2014 Microbial Stress Response Gordon Research Conference. Keynote lecture.
* EMBO | EMBL Symposium: New Approaches and Concepts in Microbiology, 11-14 October 2015, EMBL Heidelberg, Invited speaker.
* ECCB2016, ECCB BioNetVisA satellite workshop, sept 2016, invited keynote.
* Applied Bioinformatics in Life Sciences (VIB), Leuven March 2018, invited speaker.
* Integrative network-based analysis for subtyping and cancer driver identification. 1st Curie international course on Systems Biology of Cancer, Paris September 2018, invited speaker.
* EFSA (European Food Safety Authority (EFSA)), Parma September 2018, invited speaker
* Lecture series on “Translational Bioinformatics and Systems Biomedicine” in Luxembourg - 23 October 2018; Integrative network-based analysis for subtyping and cancer driver identification. Invited speaker.
* Integrative network-based analysis for subtyping and cancer driver identification. 2nd Curie international course on Systems Biology of Cancer, Paris September 2019, invited speaker.

More than 34 submissions of the work the group were selected for oral presentations at international conferences.

**Area of Expertise**

K. Marchal obtained a PhD in Molecular Microbiology in 1999. Because of her interest in statistics and engineering, she pursued her postdoctoral research in the Dept of Engineering (ESAT/ KU Leuven) at the time bioinformatics was emerging. In 2004 she became assistant and later associate professor at the KU Leuven. In 2011, she obtained an associate professor position in bioinformatics at Ghent University (Dept of Plant Biotechnology and Bioinformatics, Fac of Sciences, MRP N2N). K. Marchal is extraordinary professor at the University of Pretoria (Dept. of Genetics). The interdisciplinary research group of K. Marchal (http://bioinformatics.psb.ugent.be/DBN/) is physically located in the Dept of Information Technology (Fac of Engineering, UGhent) and is part of IMEC. K. Marchal has been promotor of more than 20 PhDs and published more than 150 papers in internationally peer reviewed journals (ResearcherID, B-5001-2013).

The main expertise of the group consists of developing computational methods for outstanding problems in systems biology and systems genetics. The goal is to design ‘relevant’ tools by combining advanced statistics and data mining with the proper biological assumptions. Methods have been developed to either assist biologists with the analysis of their own specific data or to discover ‘new biology’ by the (re)analysis of large datasets. The group has done pioneering work in the area of Gibbs sampling based motif detection, coexpression analysis, network-inference and network-based data integration with applications in human, yeast, microbes and plants. Working in different application domains has always been the strength of the group as this allowed developing a bird’s eye view on different systems, which contributes to better conceptualizing the specific differences between the studied systems during method design.

Since 2013 the group became interested in exploiting natural variation to better understand phenotypes. The main focus was on the application of systems genetics in clonal systems (bacteria and cancer). Based on the network-based techniques the group developed for genotype-based subtyping of tumor samples and driver identification, the group was nominated by E. Birney to apply for a membership to the ICGC consortium (http://icgc.org/), the internationally renowned cancer genome consortium that is responsible for the genotyping and molecular phenotyping of large tumor cohorts. This membership allowed to further extend the group’s expertise in cancer research up to the extent that the group is one of the established method development groups active in the domain of tumor cohort analysis. Their expertise gained as member of the ICGC consortium convinced K. Marchal of the usefulness of exploiting the molecular data gained from cohorts of clinically well-defined tumor cohorts to forward precision oncology. It is therefore the group’s ambition to contribute with their tools and expertise to improved clinical practice. In this context the group has recently filed several project applications. The group also applies the same techniques for clonal genotype-phenotype mapping in bacterial systems to study the evolutionary aspects of antibiotic resistance.

The group has ample of expertise in NGS analysis, analysis of data generated by metagenomics, genotype phenotype mapping or systems biology experiments. The main focus is on data integration and network guided analysis.

K. Marchal has coordinated several larger interuniversity research consortia such as ‘Bioframe, an algorithmic platform for integrative modelling in systems biology’, NEMOA (coordinator for Ghent university) and was member of several excellence centers in bioinformatics both at the KU Leuven and at the UGent (Symbiosys (ended in 2010), NATAR (ended in 2014), MRP ‘from nucleotides to networks” (ended in 2016). K. Marchal is member of the network analysis subgroup of the PCAWG (pan cancer analysis of whole genomes) initiative of the international cancer genome consortium (ICGC, <https://icgc.org/>), of MOVEMBER initiative on oligo and polymetastatic prostate cancer and of CRIG (Cancer Research Institute Ghent) and is a member of the advisory committee of the Scientific Institute of Health (Sciensano).

**BIBLIOMETRIC ANALYSIS**

A full list of my publications can be found at: <http://www.researcherid.com/rid/B-5001-2013> or at Ghent university (https://biblio.ugent.be/person/802000961346).