

# Curriculum Vitae

Jaap Kaandorp

May 2012

Dr. Jaap A. Kaandorp  
Section Computational Science  
Faculty of Science  
University of Amsterdam  
Science Park 904  
1098 XH Amsterdam  
The Netherlands  
Phone: +31 20 5257539 / +31 20 5257463  
email: J.A.Kaandorp@uva.nl  
<http://www.science.uva.nl/~jaapk/>



## Professional experience

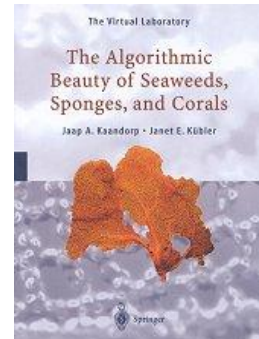
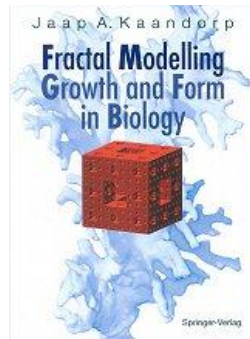
In 1985 I received my MSc, with distinction, in biology (main subject marine biology) and a PhD (subject modelling growth and form of marine organisms) in computer science and mathematics in 1992, both from the University of Amsterdam. I have worked from 1985 -1987 as a researcher at the Centre of Computer Science and Mathematics in Amsterdam. In 1992 I did research as a postdoctoral fellow, on a Government of Canada Award, at the Department of Computer Science of the University of Calgary in Canada. Currently I am working as an associate professor at the Section Computational Science of the Faculty of Science of the University of Amsterdam.

## Ongoing Research

My research interests are: morphogenesis, marine sessile organisms, evolutionary processes, modelling and simulation of developmental regulatory networks and metabolic pathways, modelling and simulation of growth and form, biomechanics. Currently I have a group of 2 MSc and 10 Phd students and two postdocs at the Section Computational Science of the Faculty of Science of the University of Amsterdam. We do research at a range of different levels of organisation (genome-gene regulatory networks-cells-tissue-organism). We work on modelling and analysis of gene regulation in cnidarians (corals and *Nematostella vectensis*), sponges, yeast and *Drosophila*. We do research on biomineralisation in corals and sponges (experimental and modelling work). We are working on growth and form of corals and the influence of light and hydrodynamics on the morphological plasticity and calcification in corals. This work is a combination of modelling work, a genetic comparison between different growth forms, phylogenetics, morphometrics of three-dimensional growth forms obtained from CT scans and field work.

## publications

Over 100 publications in refereed publications in international journals and books. Selected publications:



### books

J.A. Kaandorp. *Fractal modelling: growth and form in biology*. Springer-Verlag, Berlin, New York, 1994

J.A. Kaandorp and J.E. Kuebler, *The algorithmic beauty of seaweeds, sponges and corals*, Springer-Verlag, Heidelberg, New York, 2001

### journals

J.A. Kaandorp, C.Lowe, D.Frenkel, and P.M.A. Sloot. The effect of nutrient diffusion and flow on coral morphology. *Phys. Rev. Lett.*, 77(11):2328--2331, 1996. (impact factor 7.6)

J.A. Kaandorp, E.A. Koopman, P.M.A. Sloot, R.P.M. Bak, M.J.A. Vermeij and L.E.H. Lampmann Simulation and analysis of flow patterns around the scleractinian coral *Madracis mirabilis* (Duchassaing and Michelotti). *Phil. Trans. R. Soc. Lond. B* 358 (1437): 1551 - 1557, 2003 (impact factor 6.05)

J.A. Kaandorp, P.M.A. Sloot, R.M.H. Merks, R.P.M. Bak and M.J.A. Vermeij, Morphogenesis of the branching reef coral *Madracis mirabilis*, *Proc. Roy. Soc. B*. 272:127-133, 2005. (impact factor 5.07)

J. Cui, J.A. Kaandorp Mathematical Modelling of Calcium Homeostasis in Yeast Cells *Cell Calcium* 39:337-348, 2006 (impact factor 3.55)

J. Vidal Rodriguez, J.A. Kaandorp, M. Dobrzynski and J.G. Blom. Spatial Stochastic Modelling of the phosphoenolpyruvate-dependent phosphotransferase (PTS) pathway in *Escherichia coli*, *Bioinformatics*, 22:1895-1901, 2006 (impact factor 4.88)

K. Kruszynski, J.A. Kaandorp and R. van Liere A computational method for quantifying morphological variation in scleractinian corals, *Coral Reefs* 26:831-840, 2007 (impact factor 3.78)

Y. Fomekong Nanfack, J.A. Kaandorp and J.G. Blom Efficient parameter estimation for spatio-temporal models of pattern formation: Case study of *Drosophila melanogaster* *Bioinformatics* 23:3356-3363, 2007 (impact factor 4.88)

W.E.G. Mueller, A. Boreiko, U. Schloemacher, X. Wang, M. Nawaz Tahir, W. Tremel, D. Brandt, J.A. Kaandorp and H. C. Schroeder, Fractal-related assembly of the axial filament in the demosponge *Suberites domuncula*: relevance to biomineralization and the formation of biogenic silica, *Biomaterials* 28:4501-4511, 2007 (impact factor 7.88)

J.A. Kaandorp, J.G. Blom, J. Verhoef, M. Filatov, M. Postma and W.E.G. Müller, Modelling genetic regulation of growth and form in a branching sponge *Proc. Roy. Soc. B*. 275:2569-2577, 2008 (impact factor 5.07)

J. Cui, J.A. Kaandorp and C.M. Lloyd Simulating In Vitro Transcriptional Response of Zinc Homeostasis System in *Escherichia coli*, *BMC Systems Biology* 2:89, 2008 (impact factor 3.57)

- X. Wang, D. Brandt, H. C. Schroeder, J. Li, A. Boreiko, U. Schlossmacher, J.A. Kaandorp, H. Gotz, H. Duschner, and W.E.G. Mueller Axial growth of hexactinellid spicules: formation of cone-like structural units in the giant basal spicules of the hexactinellid *Monorhaphis*, *Journal of Structural Biology* 164:270-280, 2008 (impact factor 4.15)
- J. Cui, J.A. Kaandorp, O. O. Ositelu, V. Beaudry, A. Knight, Y. Fomekong Nanfack, K. W. Cunningham, Simulating Calcium Influx and Free Calcium Concentrations in Yeast, *Cell Calcium* 45: 123-132, 2009 (impact factor 3.55)
- M. Ashyraliyev, Y. Fomekong Nanfack, J.A. Kaandorp, J.G. Blom Systems biology: Parameter estimation for biochemical models, *FEBS journal* 276:886-902, 2009 (impact factor 3.13)
- Y. Fomekong Nanfack, M. Postma J.A. Kaandorp, Inferring Drosophila gap gene regulatory network: a parameter sensitivity and perturbation analysis *BMC Systems Biology*, 3:94, 2009 (impact factor 3.57)
- M.V. Filatov, J.A. Kaandorp, M. Postma, R. van Liere, K.J. Kruszynski, M.J.A. Vermeij, G.J. Streekstra and R.P.M. Bak, A comparison between coral colonies from the *Madracis* genus and simulated forms, *Proc. R. Soc. B* 277:3555-3561, 2010 (impact factor 5.07)
- P.R. Frade, M.C. Reyes-Nivia, J. Faria, J.A. Kaandorp, P.C. Luttkhuizen R.P.M. Bak, Semi-permeable species boundaries in the coral genus *Madracis*: the role of introgression in a brooding coral system, *Molecular Phylogenetics and Evolution* 57:1072-1090, 2010 (impact factor 4.39)
- C. Tamulonis, M. Postma, H. Marlow, C. Magie, J. de Jong, and J.A. Kaandorp, Morphometrics & Modeling of *Nematostella vectensis* Gastrulation, *Developmental Biology* 351:217-228 2011 (impact factor 4.42)
- C. Tamulonis, M. Postma and J.A. Kaandorp Modeling Filamentous Cyanobacteria Reveals the Advantages of Long and Fast Trichomes for Optimizing Light Exposure, *Plos One*, 6: e22084 (impact factor 4.35)
- W. E.G. Müller, M. Binder, J. von Lintig, Yue-Wei Guo, Xiaohong Wang, J. A. Kaandorp, M. Wiens, H. C. Schröder Interaction of the retinoic acid signaling pathway with spicule formation in the marine sponge *Suberites domuncula* through activation of bone morphogenetic protein-*Biochimica et Biophysica Acta*, 1810:1178-94 2011 (impact factor 5.02)
- P. Ramos-Silva, S. Benhamada, N. Le Roy, B. Marie, N. Guichard, I. Zanella-Cléon, L. Plasseraud, M. Corneillat, G. Alcaraz, J. Kaandorp and F. Marin. Orphan proteins in molluscan shell biomineralization: a case study with *Upsalin* *ChemBioChem*, 2012:13:1-13 (impact factor 3.95)
- Y. Kim., R. Sinclair, N. Chindapol, J. A. Kaandorp, E. De Schutter, Geometric Theory Predicts Bifurcations in Minimal Wiring Cost Trees in Biology Are Flat, *Plos Computational Biology* 8: e1002474, 2012 (impact factor 5.76)