BIOGRAPHICAL SKETCH

Alexander van Oudenaarden

PROFESSIONAL PREPARATION

Delft University of Technology, The Netherlands	Materials Science and Engineering	M.S. 1993
Delft University of Technology, The Netherlands	Physics	M.S. 1993
Delft University of Technology, The Netherlands	Physics	Ph.D. 1998
Stanford University, Stanford, CA	Biophysics	1998 - 1999

APPOINTMENTS

09/2012 – present	Director Hubrecht Institute for Developmental Biology and Stem Cell Research, the Royal Netherlands Academy of Arts and Sciences (KNAW) and University Medical Center Utrecht, Utrecht, The Netherlands.
01/2013 – present	Professor, Faculty of Science, Utrecht University, Utrecht, The Netherlands.
01/2013 – present	Professor, University Medical Center Utrecht, Utrecht, The Netherlands.
09/2009 – 01/2014	Extramural faculty member of the Koch Institute for Integrative Cancer Research at MIT, Cambridge, MA, USA.
05/2009 – 01/2014	Professor of Biology Department of Biology, Massachusetts Institute of Technology, Cambridge, MA, USA.
07/2008 – 01/2014	Professor of Physics Department of Physics, Massachusetts Institute of Technology, Cambridge, MA, USA.
06/2008 – 01/2009	Visiting Professor Hubrecht Institute for Developmental Biology and Stem Cell Research, Utrecht, The Netherlands.
07/2004 – 06/2008	Associate Professor of Physics with tenure Department of Physics, Massachusetts Institute of Technology, Cambridge, MA, USA.
01/2000 – 06/2004	Assistant Professor of Physics Department of Physics, Massachusetts Institute of Technology, Cambridge, MA, USA.
03/1998 – 12/1999	Postdoctoral research Department of Chemistry, Stanford University, Stanford, CA, USA. Laboratory of Prof. S.G. Boxer Micropatterning of supported phospholipid bilayers
03/1998 – 12/1999	Postdoctoral research Department of Biochemistry, Stanford, CA, USA. Laboratory of Prof. J.A. Theriot Force generation of polymerizing actin filaments

HONORS AND AWARDS

2017 Dutch Organization for Scientific Research (NWO) Spinoza Award
2017 EMBO member
2017 European Research Council (ERC) Advanced Grant
2015 Member of Koninklijke Hollandsche Maatschappij der Wetenschappen (KHMW)
2014 Member of the Royal Netherlands Academy of Arts and Sciences (KNAW)
2012 European Research Council (ERC) Advanced Grant
2012 Dutch Organization for Scientific Research (NWO) Vici Award
2008 NIH Director's Pioneer Award
2008 Guggenheim Fellow
2007 School of Science Prize for Excellence in Graduate Teaching
2001 Keck Career Development Professor in Biomedical Engineering
2001 Alfred Sloan Research Fellow
2001 NSF CAREER award
2000 Edgerly Science Partnership Award
1998 Andries Miedema Award for best Ph.D.-research in the field of condensed matter physics in the Netherlands, awarded every other year by Fundamental Research on Matter (FOM).
1998 Dutch Organization for Scientific Research (NWO) TALENT stipendium.
1998 Ph.D. Applied Physics, *cum laude*.
1994 Award for best undergraduate research in Materials Science, yearly award by Delft University of Technology.
1993 M.S. Materials Science and Engineering, *cum laude*.

OTHER EXPERIENCE

09/2018 – present	Member of Advisory Board of Single Cell Discoveries B.V.
07/2015 – present	Member of National Scientific Advisory board, The Netherlands Cancer Institute (NKI)
09/2014 – present	Organizing committee Single Cell Genomics, yearly conference
05/2014 – 12/2018	Advisory editorial board member *Molecular Systems Biology*
01/2013 – present	Member of the Scientific Advisory Board of the European Molecular Biology Laboratory (EMBL)
01/2012 – present	Member of the Scientific Advisory Board of the Max Planck Institutes for Molecular Cell Biology and Genetics
09/2011 – present	Member of the Scientific Advisory Board of the Whitehead Institute for Biomedical Research
10/2009 – 07/2012	Director of the MIT Center for Single-Cell Dynamics in Cancer (NIH/NCI funded U54 Physical Sciences-Oncology Center). The goal of this center is use both theoretical and experimental approaches inspired by Physics to attack important problems in cancer biology by developing novel technology and analytical/computational methods to track the dynamics of cancer at the single cell level.
06/2007 – 12/2011	Organizer of CSB (Computational and Systems Biology) seminar series.
01/2005 – 12/2007	Associate Editor *Biophysical Journal*
06/2004 – 07/2006	Course Faculty at the Marine Biology Laboratory (Woods Hole) Summer Course *'Physiology: Modern Cell Biology Using Microscopic, Biochemical and Computational Approaches'*
09/2002 – 12/2009	Lecturer and creator of MIT Graduate course 7.81/8.591/9.531 Systems Biology.

PUBLICATION LIST

2019

H. Honkoop, D.E. de Bakker, A. Aharonov, F. Kruse, A. Shakked, P.D. Nguyen, C. de Heus, L. Garric, M.J. Muraro, A. Shoffner, F. Tessadori, J.C. Peterson, W. Noort, A. Bertozzi, G. Weidinger, G. Posthuma, D. Grun, W.J. van der Laarse, J. Klumperman, R.T. Jaspers, K.D. Poss, A. van Oudenaarden, E. Tzahor, J. Bakkers.
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J.H. van Es, K. Wiebrands, C. López-Iglesias, M. van de Wetering, L. Zeinstra, M. van den Born, J. Korving, N. Sasaki, P.J. Peters, A. van Oudenaarden, H. Clevers.
Enteroendocrine and tuft cells support Lgr5 stem cells on Paneth cell depletion.
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C.S. Baron, A. van Oudenaarden.
Unravelling cellular relationships during development and regeneration using genetic lineage tracing.
Nat Rev Mol Cell Biol. **20**, 753-765 (2019).

C.S. Baron, A. Barve, M.J. Muraro, R. van der Linden, G. Dharmadhikari, A. Lyubimova, E. J.P. de Koning, and A. van Oudenaarden.
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Cell **179**, 527-542 (2019).

L. van Gurp, M.J. Muraro, T. Dielen, L. Seneby, G. Dharmadhikari, G. Gradwohl, A. van Oudenaarden, and E.J.P. de Koning.
A transcriptomic roadmap to α- and β-cell differentiation in the embryonic pancreas.
Development **146**, doi: 10.1242/dev.173716 (2019).

B. Etemad, A. Vertesy, T.E.F. Kuijt, C. Sacristan, A. van Oudenaarden, and G.J.P.L. Kops.
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B.J. Pepe-Mooney, M.T. Dill, A. Alemany, J. Ordovas-Montanes, Y. Matsushita, A. Rao, A. Sen, M. Miyazaki, S. Anakk, P.A. Dawson, N. Ono, A.K. Shalek, A. van Oudenaarden, and F.D. Camargo.
Single-Cell Analysis of the Liver Epithelium Reveals Dynamic Heterogeneity and an Essential Role for YAP in Homeostasis and Regeneration.
Cell Stem Cell **25**, 23-38 (2019).

E. Driehuis, S. Kolders, S. Spelier, K. Lõhmussaar, S.M. Willems, L.A. Devriese, R. de Bree, E.J. de Ruiter, J. Korving, H. Begthel, J.H. van Es, V. Geurts, G.W. He, R.H. van Jaarsveld, R. Oka, M.J. Muraro, J. Vivié, M.M.J.M. Zandvliet, A.P.A. Hendrickx, N. Iakobachvili, P. Sridevi, O. Kranenburg, R. van Boxtel, G.J.P.L. Kops, D.A. Tuveson, P.J. Peters, A. van Oudenaarden, and H. Clevers.
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A.C.F. Bolhaqueiro, B. Ponsioen, B. Bakker, S.J. Klaasen, E. Kucukkose, R.H. van Jaarsveld, J. Vivié, I. Verlaan-Klink, N. Hami, D.C.J. Spierings, N. Sasaki, D. Dutta, S.F. Boj, R.G.J. Vries, P.M. Lansdorp, M. van de Wetering, A. van Oudenaarden, H. Clevers, O. Kranenburg, F. Foijer, H.J.G. Snippert, and G.J.P.L. Kops.
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O. Kopper, C.J. de Witte, K. Lõhmussaar, J.E. Valle-Inclan, N. Hami, L. Kester, A.V. Balgobind, J. Korving, N. Proost, H. Begthel, L.M. van Wijk, S.A. Revilla, R. Theeuwsen, M. van de Ven, M.J. van Roosmalen, B. Ponsioen, V.W.H. Ho, B.G. Neel, T. Bosse, K.N. Gaarenstroom, H. Vrieling, M.P.G. Vreeswijk, P.J. van Diest, P.O. Witteveen, T. Jonges, J.L. Bos, A. van Oudenaarden, R.P. Zweemer, H.J.G. Snippert, W.P. Kloosterman, and H. Clevers.
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J.P. Gerlach, J.A.G. van Buggenum, S.E.J. Tanis, M. Hogeweg, B.M.H. Heuts, M.J. Muraro, L. Elze, F. Rivello, A. Rakszewska, A. van Oudenaarden, W.T.S. Huck, H.G. Stunnenberg, and K.W. Mulder.
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N. Sachs, A. Papaspyropoulos, D.D. Zomer-van Ommen, I. Heo, L. Böttinger, D. Klay, F. Weeber, G. Huelsz-Prince, N. Iakobachvili, G.D. Amatngalim, J. de Ligt, A. van Hoeck, N. Proost, M.C. Viveen, A. Lyubimova, L. Teeven, S. Derakhshan, J. Korving, H. Begthel, J.F. Dekkers, K. Kumawat, E. Ramos, M.E. van Oosterhout, G.J. Offerhaus, D.J. Wiener, E.P. Olimpio, K.K. Dijkstra, E.F. Smit, M. van der Linden, S. Jaksani, M. van de Ven, J. Jonkers, A.C. Rios, E.E. Voest, C.H. van Moorsel, C.K. van der Ent, E. Cuppen, A. van Oudenaarden, F.E. Coenjaerts, L. Meyaard, L.J. Bont, P.J. Peters, S.J. Tans, J.S. van Zon, S.F. Boj, R.G. Vries, J.M. Beekman, and H. Clevers.
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C. S. Baron, L. Kester, A. Klaus, J. C. Boisset, R. Thambyrajah, L. Yvernogeau, V. Kouskoff, G. Lacaud, A. van Oudenaarden, and C. Robin.
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J. C. Boisset, J. Vivié, D. Grün, M. J. Muraro, A. Lyubimova, and A. van Oudenaarden.
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L. Kester and A. van Oudenaarden.
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Cell Stem Cell **23**, 166-179 (2018).

Á. Vértesy, W. Arindrarto, M. S. Roost, B. Reinius, V. Torrens-Juaneda, M. Bialecka, I. Moustakas, Y. Ariyurek, E. Kuijk, H. Mei, R. Sandberg, A. van Oudenaarden, and S. M. Chuva de Sousa Lopes.
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C. G. Engert, R. Droste, A. van Oudenaarden, and H. R. Horvitz.
A *C. elegans* protein with a PRDM9-like SET domain localizes to chromatin-associated foci and promotes spermatocyte gene expression, sperm production and fertility.
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A. Alemany, M. Florescu, C. S. Baron, J. Peterson-Maduro, and A. van Oudenaarden.
Whole-organism clone tracing using single-cell sequencing.
Nature **556**, 108-112 (2018).

C. J. M. Loomans, N. Williams Giuliani, J. Balak, F. Ringnalda, L. van Gurp, M. Huch, S. F. Boj, T. Sato, L. Kester, S. M. C. de Sousa Lopes, M. S. Roost, S. Bonner-Weir, M. A. Engelse, T. J. Rabelink, H. Heimberg, R. G. J. Vries, A. van Oudenaarden, F. Carlotti, H. Clevers, and E. J. P. de Koning.
Expansion of adult human pancreatic tissue yields organoids harboring progenitor cells with endocrine differentiation potential.
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M. M. Gladka, B. Molenaar, H. de Ruiter, D. Versteeg, G. P. A. Lacraz, S. van der Elst, M. M. H. Huibers, A. van Oudenaarden, and E. van Rooij.
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O. Basak, T. G. Krieger, M. J. Muraro, K. Wiebrands, D. E. Stange, J. Frias-Aldeguer, N. C. Rivron, M. van de Wetering, J. H. van Es, A. van Oudenaarden, B. D. Simons, and H. Clevers.
Troy+ brain stem cells cycle through quiescence and regulate their number by sensing niche occupancy.
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2017

B. Artegiani, A. Lyubimova, M. Muraro, J. H. van Es, A. van Oudenaarden, and H. Clevers.
A single-cell RNA sequencing study reveals cellular and molecular dynamics of the hippocampal neurogenic niche.
Cell Reports **21**, 3271-3284 (2017).

A. Regev, S. A. Teichmann, E. S. Lander, I. Amit, C. Benoist, E. Birney, B. Bodenmiller, P. Campbell, P. Carninci, M. Clatworthy, H. Clevers, B. Deplancke, I. Dunham, J. Eberwine, R. Eils, W. Enard, A. Farmer, L. Fugger, B. Göttgens, N. Hacohen, M. Haniffa, M. Hemberg, S. Kim, P. Klenerman, A. Kriegstein, E. Lein, S. Linnarsson, E. Lundberg, J. Lundeberg, P. Majumder, J. C. Marioni, M. Merad, M. Mhlanga, M. Nawijn, M. Netea, G. Nolan, D. Pe'er, A. Phillipakis, C. P. Ponting, S. Quake, W. Reik, O. Rozenblatt-Rosen, J. Sanes, R. Satija, T. N. Schumacher, A. Shalek, E. Shapiro, P. Sharma, J. W. Shin, O. Stegle, M. Stratton, M. J. T. Stubbington, F. J. Theis, M. Uhlen, A. van Oudenaarden, A. Wagner, F. Watt, J. Weissman, B. Wold, R. Xavier, N. Yosef, and Human Cell Atlas Meeting Participants.
The human cell atlas.
Elife **6**, doi: 10.7554 (2017).

Dynamics of lineage commitment revealed by single-cell transcriptomics of differentiating embryonic stem cells
S. Semrau, J. E. Goldmann, M. Soumillon, T. S. Mikkelsen, R. Jaenisch, and A. van Oudenaarden.
Nature Communications 10.1038/s41467-017-01076-4 (2017).

S. C. van den Brink, F. Sage, Á. Vértesy, B. Spanjaard, J. Peterson-Maduro, C. S. Baron, C. Robin, and A. van Oudenaarden.
Single-cell sequencing reveals dissociation-induced gene expression in tissue subpopulations.
Nature Methods **14**, 935-936 (2017).

G. P. A. Lacraz, J. P. Junker, M. M. Gladka, B. Molenaar, K. T. Scholman, M. Vigil-Garcia, D. Versteeg, H. de Ruiter, M. W. Vermunt, M. P. Creyghton, M. M. H. Huibers, N. de Jonge, A. van Oudenaarden, and E. van Rooij.
Tomo-seq identifies SOX9 as a key regulator of cardiac fibrosis during ischemic Injury.
Circulation **136**, 1396-1409 (2017).

J. den Hertog and A. van Oudenaarden.
Celebrating 100 years of Developmental Biology at the Hubrecht Institute.
Developmental Biology **428**, 259-260 (2017).

P. Dierickx, M. W. Vermunt, M. J. Muraro, M. P. Creyghton, P. A. Doevendans, A. van Oudenaarden, N. Geijsen, and L. W. van Laake.
Circadian networks in human embryonic stem cell-derived cardiomyocytes.
EMBO Reports **18**, 1199-1212 (2017).

C. L. Scheele, E. Hannezo, M. J. Muraro, A. Zomer, N. S. Langedijk, A. van Oudenaarden, B. D. Simons, and J. van Rheenen.
Identity and dynamics of mammary stem cells during branching morphogenesis.
Nature **542**, 313-317 (2017).

C. Adolphe, J. P. Junker, A. Lyubimova, A. van Oudenaarden, and B. Wainwright.
Patched receptors sense, interpret and establish an epidermal Hedgehog signalling gradient.
Journal of Investigative Dermatology **137**, 179-186 (2017).

O. Basak, J. Beumer, K. Wiebrands, H. Seno, A. van Oudenaarden, and H. Clevers.
Induced quiescence of Lgr5+ stem cells in intestinal organoids enables differentiation of hormone-producing enteroendocrine cells.
Cell Stem Cell **20**, 177-190 (2017).

2016

S. Amin, R. Neijts, S. Simmini, C. van Rooijen, S. C. Tan, L. Kester, A. van Oudenaarden, M. P. Creyghton, and J. Deschamps.
Cdx and T Brachyury co-activate growth signaling in the embryonic axial progenitor niche.
Cell Reports **17**, 3165-3177 (2016).

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N. Sasaki, N. Sachs, K. Wiebrands, S. I. Ellenbroek, A. Fumagalli, A. Lyubimova, H. Begthel, M. van den Born, J. H. van Es, W. R. Karthaus, V. S. Li, C. López-Iglesias, P. J. Peters, J. van Rheenen, A. van Oudenaarden, and H. Clevers.
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F. Kruse, J. P. Junker, A. van Oudenaarden, and J. Bakkers.
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D. Mooijman, S. S. Dey, J. C. Boisset, N. Crosetto, and A. van Oudenaarden.
Single-cell 5hmC sequencing reveals chromosome-wide variability and enables lineage reconstruction.
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D. Grün, M. J. Muraro, J. C. Boisset, K. Wiebrands, A. Lyubimova, G. Dharmadhikari, M. van den Born, J. van Es, E. Jansen, H. Clevers, E. J. P. de Koning, and A. van Oudenaarden.
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Cell Stem Cell **19**, 266-277 (2016).

V. Ramanan, K. Trehan, M. L. Ong, J. M. Luna, H. H. Hoffmann, C. Espiritu, T. P. Sheahan, H. Chandrasekar, R. E. Schwartz, K. S. Christine, C. M. Rice, A. van Oudenaarden, and S. N. Bhatia.
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Virology **494**, 236-247 (2016).

E. Beerling, D. Seinstra, E. de Wit, L. Kester, D. van der Velden, C. Maynard, R. Schäfer, P. van Diest, E. Voest, A. van Oudenaarden, N. Vrisekoop, and J. van Rheenen.
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P. W. Tetteh, O. Basak, H. F. Farin, K. Wiebrands, K. Kretzschmar, H. Begthel, M. van den Born, J. Korving, F. de Sauvage, J. H. van Es, A. van Oudenaarden, and H. Clevers.
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C. C. Wu, F. Kruse, M. D. Vasudevarao, J. P. Junker, D. C. Zebrowski, K. Fischer, E. S. Noël, D. Grün, E. Berezikov, F. B. Engel, A. van Oudenaarden, G. Weidinger, and J. Bakkers.
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2015

S. Semrau and A. van Oudenaarden.
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Annual Review Cell and Developmental Biology **13**, 317 – 345 (2015).

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N. Slavov, S. Semrau, E. Airoldi, B. Budnik, and Oudenaarden.
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D. Grün, A. Lyubimova, L. Kester, K. Wiebrands, O. Basak, N. Sasaki, H. Clevers, and A. van Oudenaarden.
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