

**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 Member of organizing committee Single Cell Genomics, yearly conference
- 05/2014 – present Advisory editorial board member *Molecular Systems Biology*
- 01/2013 – 12/2018 Member of the scientific advisory board of the European Molecular Biology Laboratory (EMBL)
- 01/2011 – 12/2019 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

### 2021

M. Sen, D. Mooijman, A. Chialastri, J.C. Boisset, M. Popovic, B. Heindryckx, S.M. Chuva de Sousa Lopes, S.S. Dey, A. van Oudenaarden  
Strand-specific single-cell methylomics reveals distinct modes of DNA demethylation dynamics during early mammalian development  
*Nature Communications* **12**, 1286 (2021)

### 2020

N. Rajewsky, G. Almouzni, S.A. Gorski, S. Aerts, I. Amit, M.G. Bertero, C. Bock, A.L. Bredenoord, G. Cavalli, S. Chiocca, H. Clevers, B. De Strooper, A. Eggert, J. Ellenberg, X.M. Fernández, M. Figlerowicz, S.M. Gasser, N. Hubner, J. Kjems, J.A. Knoblich, G. Krabbe, P. Lichter, S. Linnarsson, J.C. Marine, J. Marioni, M.A. Marti-Renom, M.G. Netea, D. Nickel, M. Nollmann, H.R. Novak, H. Parkinson, S. Piccolo, I. Pinheiro, A. Pombo, C. Popp, W. Reik, S. Roman-Roman, P. Rosenstiel, J.L. Schultze, O. Stegle, A. Tanay, G. Testa, D. Thanos, F.J. Theis, M.E. Torres-Padilla, A. Valencia, C. Vallot, A. van Oudenaarden, M. Vidal, T. Voet; LifeTime Community.  
LifeTime and improving European healthcare through cell-based interceptive medicine.  
*Nature* **587**, 377-386 (2020)

S.C. van den Brink, A. Alemany, V. van Batenburg, N. Moris, M. Blotenburg, J. Vivié, P. Baillie-Johnson, J. Nichols, K.F. Sonnen, A. Martinez Arias, A. van Oudenaarden.  
Single-cell and spatial transcriptomics reveal somitogenesis in gastruloids.  
*Nature* **582**, 405-409 (2020)

Y. Post, J. Puschhof, J. Beumer, H.M. Kerckamp, M.A.G. de Bakker, J. Slagboom, B. de Barbanson, N.R. Wevers, X.M. Spijkers, T. Olivier, T.D. Kazandjian, S. Ainsworth, C.L. Iglesias, W.J. van de Wetering, M.C. Heinz, R.L. van Ineveld, R.G.D.M. van Kleef, H. Begthel, J. Korving, Y.E. Bar-Ephraim, W. Getreuer, A.C. Rios, R.H.S. Westerink, H.J.G. Snippert, A. van Oudenaarden, P.J. Peters, F.J. Vonk, J. Kool, M.K. Richardson, N.R. Casewell, H. Clevers.  
Snake Venom Gland Organoids.  
*Cell* **182**, 233-247 (2020)

N. Moris, K. Anlas, S.C. van den Brink, A. Alemany, J. Schröder, S. Ghimire, T. Balayo, A. van Oudenaarden, A. Martinez Arias.  
An in vitro model of early anteroposterior organization during human development.  
*Nature* **582**, 410-415 (2020)

N. Battich, J. Beumer, B. de Barbanson, L. Krenning, C.S. Baron, M.E. Tanenbaum, H. Clevers, A. van Oudenaarden.  
Sequencing metabolically labeled transcripts in single cells reveals mRNA turnover strategies.  
*Science* **367**, 1151-1156 (2020)

### 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.  
Single-cell analysis uncovers that metabolic reprogramming by ErbB2 signaling is essential for cardiomyocyte proliferation in the regenerating heart.  
*Elife* **8**, doi: 10.7554/eLife.50163 (2019).

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.  
*Proc Natl Acad Sci U S A* **116**, 26599-26605 (2019).

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.  
Cell type purification by single-cell transcriptome-trained sorting.  
*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  $\alpha$ - and  $\beta$ -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.  
Spindle checkpoint silencing at kinetochores with submaximal microtubule occupancy.  
*Journal of Cell Science* **132**, doi: 10.1242/jcs.231589 (2019).

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. Löhmußaar, 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.  
Oral Mucosal Organoids as a Potential Platform for Personalized Cancer Therapy.  
*Cancer Discovery* **9**, 852-871 (2019).

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.  
Ongoing chromosomal instability and karyotype evolution in human colorectal cancer organoids.

*Nature Genetics* **51**, 824-834 (2019).

O. Kopper, C.J. de Witte, K. Löhmußaar, 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.

An organoid platform for ovarian cancer captures intra- and interpatient heterogeneity.  
*Nature Medicine* **25**, 838-849 (2019).

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.

Combined quantification of intracellular (phospho-)proteins and transcriptomics from fixed single cells.

*Scientific Reports* **9**, doi: 10.1038/s41598-018-37977-7 (2019).

A. Attardi, T. Fulton, M. Florescu, G. Shah, L. Muresan, M.O. Lenz, C. Lancaster, J. Huisken, A. van Oudenaarden, and B. Steventon.

Correction: Neuromesodermal progenitors are a conserved source of spinal cord with divergent growth dynamics.

*Development* **146**, doi: 10.1242/dev.175620 (2019).

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.

Long-term expanding human airway organoids for disease modeling.

*EMBO Journal* **38**, doi: 10.15252/embj.2018100300 (2019).

## 2018

P.E. Boulais, T. Mizoguchi, S. Zimmerman, F. Nakahara, J. Vivié, J.C. Mar, A. van Oudenaarden, and P. Frenette.

The Majority of CD45 Ter119 CD31 Bone Marrow Cell Fraction Is of Hematopoietic Origin and Contains Erythroid and Lymphoid Progenitors

*Immunity* **49**, 627-639 (2018).

A. Ebbing, A. Vértesy, M.C. Betist, B. Spanjaard, J.P. Junker, E. Berezikov, A. van Oudenaarden, and H.C. Korswagen.

Spatial Transcriptomics of *C. elegans* Males and Hermaphrodites Identifies Sex-Specific Differences in Gene Expression Patterns

*Developmental Cell* **47**, 801-813 (2018).

A. Attardi, T. Fulton, M. Florescu, G. Shah, L. Muresan, M.O. Lenz, C. Lancaster, J. Huisken, A. van Oudenaarden, and B. Steventon.

Neuromesodermal progenitors are a conserved source of spinal cord with divergent growth dynamics

*Development* **145**, doi: 10.1242/dev.166728 (2018).

F. Wimmers, N. Subedi, N. van Buuringen, D. Heister, J. Vivié, I. Beeren-Reinieren, R. Woestenenk, H. Dolstra, A. Piruska, J.F.M. Jacobs, A. van Oudenaarden, C.G. Figdor, W.T.S. Huck, I.J.M. de Vries, and J. Tel.

Single-cell analysis reveals that stochasticity and paracrine signaling control interferon-alpha production by plasmacytoid dendritic cells

*Nature Communications* **9**, 3317 (2018).

E. F. Roovers, L. J. T. Kaaij, S. Redl, A. W. Bronkhorst, K. Wiebrands, A. M. de Jesus Domingues, H. Y. Huang, C. T. Han, S. Riemer, R. Dosch, W. Salvenmoser, D. Grün, F. Butter, A. van Oudenaarden, and R. F. Ketting.

Tdrd6a regulates the aggregation of Buc into functional subcellular compartments that drive germ cell specification.

*Developmental Cell* **46**, 285-301 (2018).

C. S. Baron, L. Kester, A. Klaus, J. C. Boisset, R. Thambyrajah, L. Yvernogeu, V. Kouskoff, G. Lacaud, A. van Oudenaarden, and C. Robin.

Single-cell transcriptomics reveal the dynamic of haematopoietic stem cell production in the aorta.

*Nature Communications* **9**, 2517 (2018).

J. C. Boisset, J. Vivié, D. Grün, M. J. Muraro, A. Lyubimova, and A. van Oudenaarden.

Mapping the physical network of cellular interactions.

*Nature Methods* **15**, 547-553 (2018).

L. Kester and A. van Oudenaarden.

Single-cell transcriptomics meets lineage tracing: best of both worlds.

*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.

Parental haplotype-specific single-cell transcriptomics reveal incomplete epigenetic reprogramming in human female germ cells.

*Nature Communications* **9**, 1873 (2018).

N. C. Rivron, J. Frias-Aldeguer, E. Vrij, J. C. Boisset, J. Korving, J. Vivié, R. Truckenmüller, A. van Oudenaarden, C. A. van Blitterswijk, and N. Geijsen.

Blastocyst-like structures generated solely from stem cells.

*Nature* **557**, 106-111 (2018).

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.

*PLoS Genetics* **14**: e1007295 (2018).

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 Gulp, 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.  
*Stem Cell Reports* **10**, 712-724 (2018).

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.  
Single-cell sequencing of the healthy and diseased heart reveals Ckap4 as a new modulator of fibroblasts activation.  
*Circulation* **138**, 166-180 (2018).

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.  
*PNAS* **115**, E610-E619 (2018).

## 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. Creighton, 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. Creighton, 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. Creighton, and J. Deschamps.

Cdx and T Brachyury co-activate growth signaling in the embryonic axial progenitor niche.

*Cell Reports* **17**, 3165-3177 (2016).

D. A. Jaitin, A. Weiner, I. Yofe, D. Lara-Astiaso, H. Keren-Shaul, E. David, T. M. Salame, A. Tanay, [A. van Oudenaarden](#), and I. Amit.

Dissecting immune circuits by linking CRISPR-pooled screens with single-cell RNA-seq.

*Cell* **167**, 1883-1896 (2016).

M. J. Muraro, G. Dharmadhikari, D. Grün, N. Groen, T. Dielen, E. Jansen, L. van Gurp, M. A. Engelse, F. Carlotti, E. J. de Koning, and A. van Oudenaarden.

A single-cell transcriptome atlas of the human pancreas.

*Cell Systems* **3**, 385-394 (2016).

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.

Reg4+ deep crypt secretory cells function as epithelial niche for Lgr5+ stem cells in colon.

*PNAS* **113**, E5399-E5407 (2016).

F. Kruse, J. P. Junker, A. van Oudenaarden, and J. Bakkers.

Tomo-seq: A method to obtain genome-wide expression data with spatial resolution.

*Methods Cell Biology* **135**, 299-307 (2016).

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.

*Nature Biotechnology* **34**, 852-856 (2016).

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.

De novo prediction of stem cell identity using single-cell transcriptome data.

*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.

Viral genome imaging of hepatitis C virus to probe heterogeneous viral infection and responses to antiviral therapies.

*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.

Plasticity between epithelial and mesenchymal states unlinks EMT from metastasis-enhancing stem cell capacity.

*Cell Reports* **14**, 2281 – 2288 (2016).

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.

Replacement of lost Lgr5-positive stem cells through plasticity of their enterocyte-lineage daughters.

*Cell Stem Cell* **18**, 203 – 213 (2016).

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.

Spatially resolved genome-wide transcriptional profiling identifies BMP signaling as essential regulator of zebrafish cardiomyocyte regeneration.

*Developmental Cell* **36**, 36 – 49 (2016).

## 2015

S. Semrau and A. van Oudenaarden.

Studying lineage decision-making in vitro: emerging concepts and novel tools.

*Annual Review Cell and Developmental Biology* **13**, 317 – 345 (2015).

D. Grün and A. van Oudenaarden.

Design and analysis of single-cell sequencing experiments.

*Cell* **163**, 799 – 810 (2015).

N. Slavov, [{HYPERLINK "javascript:void\(0\);"}](#), [{HYPERLINK "javascript:void\(0\);"}](#), [{HYPERLINK "javascript:void\(0\);"}](#), and Oudenaarden.

Differential stoichiometry among core ribosomal proteins.

*Cell Reports* **13**, 865 – 873 (2015).

D. Grün, A. Lyubimova, L. Kester, K. Wiebrands, O. Basak, N. Sasaki, H. Clevers, and A. van Oudenaarden.

Single-cell mRNA sequencing reveals rare intestinal cell types.

*Nature* **525**, 251 – 255 (2015).

Y. Q. Soh, J. P. Junker, M. E. Gill, J. L. Mueller, A. van Oudenaarden, and D. C. Page.

A gene regulatory program for meiotic prophase in the fetal ovary.

*PLoS Genetics* **11**:e1005531 doi: 10.1371/journal.pgen.1005531 (2015).

J. Kind, L. Pagie, S. S. de Vries, L. Nahidiazar, S. S. Dey, M. Bienko, Y. Zhan, B. Lajoie, C. A. de Graaf, M. Amendola, G. Fudenberg, M. Imakaev, L. A. Mirny, K. Jalink, J. Dekker, A. van Oudenaarden, and B. van Steensel.

Genome-wide maps of nuclear lamina interactions in single human cells.

*Cell* **163**, 134 – 147 (2015).

M. Welling, H. H. Chen, J. Muñoz, M. U. Musheev, L. Kester, J. P. Junker, N.

Mischerikow, M. Arbab, E. Kuijk, L. Silberstein, P. V. Kharchenko, M. Geens, C. Niehrs,

H. van de Velde, A. van Oudenaarden, A. J. Heck, and N. Geijsen.

DAZL regulates Tet1 translation in murine embryonic stem cells.

*EMBO Reports* **16**, 791 – 802 (2015).

J. P. Junker and A. van Oudenaarden.

Single-cell transcriptomics enters the age of mass production.

*Molecular Cell* **58**, 563 – 564 (2015).

J. S. van Zon, S. Kienle, G. Huelsz-Prince, M. Barkoulas, and A. van Oudenaarden.

Cells change their sensitivity to an EGF morphogen gradient to control EGF-induced gene expression.

*Nature Communications* **6**:7053. doi: 10.1038/ncomms8053 (2015).

M. van de Wetering, H. E. Francies, J. M. Francis, G. Bounova, F. Iorio, A. Pronk, W. van Houdt, J. van Gorp, A. Taylor-Weiner, L. Kester, A. McLaren-Douglas, J. Blokker, S. Jaksani, S. Bartfeld, R. Volckman, P. van Sluis, V. S. Li, S. Seepo, C. Sekhar Pdamallu, K. Cibulskis, S. L. Carter, A. McKenna, M. S. Lawrence, L. Lichtenstein, C. Stewart, J. Koster, R. Versteeg, A. van Oudenaarden, J. Saez-Rodriguez, R. G. Vries, G. Getz, L. Wessels, M. R. Stratton, U. McDermott, M. Meyerson, M. J. Garnett, and H. Clevers.  
Prospective derivation of a living organoid biobank of colorectal cancer patients.  
*Cell* **161**, 933 – 945 (2015).

J. M. Schmiedel, S. L. Klemm, Y. Zheng, A. Sahay, N. Blüthgen, D. S. Marks, and A. van Oudenaarden.  
MicroRNA control of protein expression noise.  
*Science* **348**, 128 – 132 (2015).

Y. C. Hu, P. K. Nicholls, Y. Q. Soh, J. R. Daniele, J. P. Junker, A. van Oudenaarden, and D. C. Page.  
Licensing of primordial germ cells for gametogenesis depends on genital ridge signaling.  
*PLoS Genetics* **11**:e1005019. doi: 10.1371/journal.pgen.1005019 (2015).

J. Schuijers, J. P. Junker, M. Mokry, P. Hatzis, B. K. Koo, V. Sasselli, L. G. van der Flier, E. Cuppen, A. van Oudenaarden, and H. Clevers.  
Ascl2 acts as an R-spondin/Wnt-responsive switch to control stemness in intestinal crypts.  
*Cell Stem Cell* **16**, 158 – 170 (2015).

S. S. Dey, L. Kester, B. Spanjaard, M. Bienko, and A. van Oudenaarden.  
Integrated genome and transcriptome sequencing of the same cell.  
*Nature Biotechnology* **33**, 285 – 289 (2015).

N. Crosetto, M. Bienko, and A. van Oudenaarden.  
Spatially resolved transcriptomics and beyond.  
*Nature Reviews Genetics* **16**, 57 – 66 (2015).

## 2014

S. Simmini, M. Bialecka, M. Huch, L. Kester, M. van de Wetering, T. Sato, F. Beck, A. van Oudenaarden, H. Clevers, and J. Deschamps.  
Transformation of intestinal stem cells into gastric stem cells on loss of transcription factor Cdx2.  
*Nature Communications* doi: 10.1038/ncomms6728 (2014).

J. P. Junker, K. A. Peterson, Y. Nishi, J. Mao, A. P. McMahon, and A. van Oudenaarden.  
A predictive model of bifunctional transcription factor signaling during embryonic tissue patterning.  
*Developmental Cell* **31**, 448 – 460 (2014).

J. P. Junker, E. S. Noël, V. Guryev, K. A. Peterson, G. Shah, J. Huisken, A. P. McMahon, E. Berezikov, J. Bakkers, and A. van Oudenaarden.  
Genome-wide RNA tomography in the zebrafish embryo.

*Cell* **159**, 662 – 675 (2014).

R. A. Mentink, T. C. Middelkoop, L. Rella, N. Ji, C. Y. Tang, M. C. Betist, A. van Oudenaarden, H. C. Korswagen.

Cell intrinsic modulation of Wnt signaling controls neuroblast migration in *C. elegans*.  
*Developmental Cell* **31**, 188 – 201 (2014).

A. Barreca, C. Martinengo, L. Annaratone, L. R., A. Chiappella, M. Ladetto, A. Demurtas, L. Chiusa, A. Stacchini, N. Crosetto, A. van Oudenaarden, and R. Chiarle.

Inter- and Intra-tumoral heterogeneity of BCL2 correlates with IgH expression and prognosis in follicular lymphoma.

*Blood Cancer Journal* **10**; 4:e249. doi: 10.1038/bcj.2014.67 (2014).

N. Slavov, B. A. Budnik, D. Schwab, E. Airoidi, and A. van Oudenaarden.

Constant growth rate can be supported by decreasing energy flux and increasing aerobic glycolysis.

*Cell Reports* **7**, 705 – 714 (2014).

D. Grün, L. Kester, and A. van Oudenaarden.

Validation of noise models for single-cell transcriptomics.

*Nature Methods* **11**, 637 – 640 (2014).

S. Klemm, S. Semrau, K. Wiebrands, D. Mooijman, D. Faddah, R. Jaenisch, and A. van Oudenaarden.

Transcriptional profiling of cells sorted by RNA abundance.

*Nature Methods* **11**, 549 – 551 (2014).

J. P. Junker and A. van Oudenaarden.

Every cell is special: genome-wide studies add a new dimension to single-cell biology.

*Cell* **157**, 8 – 11 (2014).

V. Almendro, Y. K. Cheng, A. Randles, S. Itzkovitz, A. Marusyk, E. Ametller, X. Gonzalez-Farre, M. Muñoz, H. G. Russnes, A. Helland, I. H. Rye, A. L. Borresen-Dale, R. Maruyama, A. van Oudenaarden, M. Dowsett, R. L. Jones, J. Reis-Filho, P. Gascon, M. Gönen, F. Michor, and K. Polyak.

Inference of tumor evolution during chemotherapy by computational modeling and in situ analysis of genetic and phenotypic cellular diversity.

*Cell Reports* **6**, 514 – 527 (2014).

V. Almendro, H. Kim, Y. K. Cheng, M. Gonen, S. Itzkovitz, P. Argani, A. van Oudenaarden, S. Sukumar, F. Michor, and K. Polyak.

Genetic and phenotypic diversity in breast tumor metastases.

*Cancer Research* **74**, 1338 – 1348 (2014).

J. R. Alvarez-Dominguez, W. Hu, B. Yuan, J. Shi, S. S. Park, A. A. Gromatzky, A. van Oudenaarden, and H. F. Lodish.

Global discovery of erythroid long noncoding RNAs reveals novel regulators of red cell maturation.

*Blood* **123**, 570 – 581 (2014).

S. Semrau, N. Crosetto, M. Bienko, M. Boni, P. Bernasconi, R. Chiarle, and A. van Oudenaarden.

FuseFISH: Robust detection of transcribed gene fusions in single cells.  
*Cell Reports* **6**, 18 – 23 (2014).

## 2013

N. Ji, T. C. Middelkoop, R. A. Mentink, M. C. Betist, S. Tonegawa, D. Mooijman, H. C. Korswagen, and A. van Oudenaarden.

Feedback control of gene expression variability in the *Caenorhabditis elegans* Wnt pathway.

*Cell* **155**, 869 – 880 (2013).

L. Teytelman, D. M. Thurtle, J. Rine J, and A. van Oudenaarden.

Highly expressed loci are vulnerable to misleading ChIP localization of multiple unrelated proteins.

*PNAS* **110**, 18602 – 18607 (2013).

D. H. Kim, D. Gruen, and A. van Oudenaarden.

Dampening of expression oscillations by synchronous regulation of a microRNA and its target.

*Nature Genetics* **45**, 1337 – 1344 (2013).

A. Lyubimova, S. Itzkovitz, J. P. Junker, Z. P. Fan, X. Wu, and A. van Oudenaarden.

Single-molecule mRNA detection and counting in mammalian tissue.

*Nature Protocols* **8**, 1743 – 1758 (2013).

C. H. Hansen and A. van Oudenaarden.

Allele-specific detection of single mRNA molecules *in situ*.

*Nature Methods* **10**, 869 – 871 (2013).

M. Fang, H. Xie, S. K. Dougan, H. Ploegh, and A. van Oudenaarden.

Stochastic cytokine expression induces mixed T helper cell states.

*PLoS Biology* **11**: e1001618. doi:10.1371/journal.pbio.1001618 (2013).

Physical Sciences - Oncology Centers Network.

A physical sciences network characterization of non-tumorigenic and metastatic cells.

*Scientific Reports* **3**:1449 doi: 10.1038/srep01449 (2013).

G. Neuert, B. Munsky, R. Z. Tan, L. Teytelman, M. Khammash, A. van Oudenaarden.

Systematic identification of signal-activated stochastic gene regulation.

*Science* **339**, 584 – 587 (2013).

M. Barkoulas, J. S. van Zon, J. Milloz, A. van Oudenaarden, and M. A. Félix.

Robustness and epistasis in the *C. elegans* vulval signaling network revealed by pathway dosage modulation.

*Developmental Cell* **24**, 64 – 75 (2013).

R. Z. Tan, N. Ji, R. A. Mentink, H. C. Korswagen, and A. van Oudenaarden.  
Deconvolving the roles of Wnt ligands and receptors in sensing and amplification.  
*Molecular Systems Biology* **9**:631 doi:10.1038/msb.2012.64 (2013).

M. Bienko, N. Crosetto, L. Teytelman, S. Klemm, S. Itzkovitz, and A. van Oudenaarden,  
A versatile genome-scale PCR-based pipeline for high-definition DNA FISH.  
*Nature Methods* **10**, 122 – 124 (2013).

## 2012

K. A. Peterson, Y. Nishi, W. Ma, A. Vedenko, L. Shokri, X. Zhang, M. McFarlane, J. M. Baizabal, J. P. Junker, A. van Oudenaarden, T. Mikkelsen, B. E. Bernstein, T. L. Bailey, M. L. Bulyk, W. H. Wong, and A. P. McMahon.  
Neural-specific Sox2 input and differential Gli-binding affinity provide context and positional information in Shh-directed neural patterning.  
*Genes and Development* **26**, 2802 – 2816 (2012).

N. Ji, and A. van Oudenaarden.  
Single molecule fluorescent in situ hybridization (smFISH) of *C. elegans* worms and embryos.  
*WormBook*, ed. The *C. elegans* Research Community, WormBook,  
doi/10.1895/wormbook.1.153.1 (2012).

N. Barker, A. van Oudenaarden, and H. Clevers.  
Identifying the stem cell of the intestinal crypt: strategies and pitfalls.  
*Cell Stem Cell* **11**, 452 – 460 (2012).

J. H. van Es, T. Sato, M. van de Wetering, A. Lyubimova, A. N. Yee Nee, A. Gregorieff, N. Sasaki, L. Zeinstra, M. van den Born, J. Korving, A. C. Martens, N. Barker, A. van Oudenaarden, and H. Clevers.  
Dll1(+) secretory progenitor cells revert to stem cells upon crypt damage.  
*Nature Cell Biology* **14**, 1009 – 1104 (2012).

Y. Buganim, D. A. Faddah, A. W. Cheng, E. Itskovich, S. Markoulaki, K. Ganz, S. L. Klemm, A. van Oudenaarden, and R. Jaenisch.  
Single-cell expression analyses during cellular reprogramming reveal an early stochastic and a late hierarchic phase.  
*Cell* **150**, 1209 – 1222 (2012).

F. J. van Werven, G. Neuert, N. Hendrick, A. Lardenois, S. Buratowski, A. van Oudenaarden, M. Primig, and A. Amon.  
Transcription of two long noncoding RNAs mediates mating-type control of gametogenesis in budding yeast.  
*Cell* **150**, 1170 – 1181 (2012). □

J. Munoz, D. E. Stange, A. G. Schepers, M. van de Wetering, B. Koo, S. Itzkovitz, R. Volckmann, K. S. Kung, J. Koster, S. Radulescu, K. Myant, R. Versteeg, O. J. Sansom, J. H. van Es, N. Barker, A. van Oudenaarden, S. Mohammed, A. J. R. Heck and H. Clevers.  
The Lgr5 intestinal stem cell signature: robust expression of proposed quiescent '+4' cell markers.

*EMBO Journal* **31**, 3079 – 3091 (2012).

N. Slavov and A. van Oudenaarden.  
How to regulate a gene: To repress or to activate?  
*Molecular Cell* **45**, 551 – 552 (2012).

J. Schneider, R. L. Skelton, S. E. Von Stetina, T. C. Middelkoop, A. van Oudenaarden,  
H. C. Korswagen, and D. M. Miller 3<sup>rd</sup>.  
UNC-4 antagonizes Wnt signaling to regulate synaptic choice in the *C. elegans* motor  
circuit.  
*Development* **139**, 2234 – 2245 (2012).

J. Yu, M. T. Valerius, M. Duah, K. Staser, J. K. Hansard, J. J. Guo, J. McMahon, J.  
Vaughan, D. Faria, K. Georgas, B. Rumballe, Q. Ren, A. M. Krautzberger, J. P. Junker,  
R. D. Thiagarajan, P. Machanick, P. A. Gray, A. van Oudenaarden, D. H. Rowitch, C. D.  
Stiles, Q. Ma, S. M. Grimmond, T. L. Bailey, M. H. Little, and A. P. McMahon.  
Identification of molecular compartments and genetic circuitry in the developing  
mammalian kidney.  
*Development* **139**, 1863 – 1873 (2012).

B. Munsky, G. Neuert, and A. van Oudenaarden.  
Using gene expression noise to understand gene regulation.  
*Science* **336**, 183 – 187 (2012).

N. Slavov, E. Airoidi, A. van Oudenaarden, and D. Botstein.  
A conserved cell growth cycle can account for the environmental stress responses of  
divergent eukaryotes.  
*Molecular Biology of the Cell* **23**, 1986 – 1997 (2012).

J. H. van Es, A. Haegbarth, P. Kujala, S. Itzkovitz, B. K. Koo, S. F. Boj, J. Korving, M.  
van den Born, A. van Oudenaarden, S. Robine, and H. Clevers.  
A critical role for the Wnt effector Tcf4 in adult intestinal homeostatic self-renewal.  
*Molecular & Cellular Biology* **32**, 1918 – 1927 (2012).

W. Guo, Z. Keckesova, J. L. Donaher, T. Shibue, V. Tischler, F. Reinhardt, S. Itzkovitz,  
A. Noske, U. Zürrer-Härdi, G. Bell, W. L. Tam, S. A. Mani, A. van Oudenaarden, and R.  
A. Weinberg.  
Slug and sox9 cooperatively determine the mammary stem cell state.  
*Cell* **148**, 1015 – 1028 (2012).

J. P. Junker and A. van Oudenaarden.  
When noisy neighbors are a blessing: analysis of gene expression noise identifies  
coregulated genes.  
*Molecular Cell* **45**, 437 – 438 (2012).

S. Itzkovitz, I. C. Blat, T. Jacks, H. Clevers, and A. van Oudenaarden.  
Optimality in the development of intestinal crypts.  
*Cell* **148**, 608 – 619 (2012).



S. Bumgarner, G. Neuert, B. F. Voight, A. Symbor-Nagrabska, P. Grisafi, A. van Oudenaarden, and G. R. Fink.  
Single-cell analysis reveals that noncoding RNAs contribute to clonal heterogeneity by modulating transcription factor recruitment.  
*Molecular Cell* **45**, 470 – 482 (2012).

S. Itzkovitz, A. Lyubimova, I. C. Blat, M. Maynard, J. van Es, J. Lees, T. Jacks, H. Clevers, and A. van Oudenaarden.  
Single-molecule transcript counting of stem-cell markers in the mouse intestine.  
*Nature Cell Biology* **14**, 106 – 114 (2012).

T. C. Middelkoop, L. Williams, P. T. Yang, M. C. Betist, N. Ji, A. van Oudenaarden, C. Kenyon, and H. C. Korswagen.  
The thrombospondin repeat containing protein MIG-21 controls a left-right asymmetric Wnt signaling response in migrating *C. elegans* neuroblasts.  
*Developmental Biology* **361**, 338 – 348 (2012).

## 2011

A. M. Saffer, D. H. Kim, A. van Oudenaarden, and H. R. Horvitz.  
The *Caenorhabditis elegans* synthetic multivulva genes prevent Ras pathway activation by tightly repressing global ectopic expression of lin-3 EGF.  
*PLoS Genetics* **7**, e1002418 (2011).

S. Mukherji, M. S. Ebert, G. X. Y. Zheng, J. S. Tsang, P. A. Sharp, and A. van Oudenaarden.  
MicroRNAs can generate thresholds in target gene expression.  
*Nature Genetics* **43**, 854 – 859 (2011).

H. S. Seidel, M. Ailion, J. Li, A. van Oudenaarden, M. V. Rockman, and L. Kruglyak.  
A novel sperm-delivered toxin causes late-stage embryo lethality and transmission ratio distortion in *C. elegans*.  
*PLoS Biology* **9**, e1001115 (2011).

M. Harterink, D. H. Kim, T. C. Middelkoop, T. D. Doan, A. van Oudenaarden, and H. C. Korswagen.  
Neuroblast migration along the anteroposterior axis of *C. elegans* is controlled by opposing gradients of Wnts and a secreted Frizzled-related protein.  
*Development* **138**, 2915 – 2924 (2011).

RNA sequencing reveals two major classes of gene expression levels in metazoan cells  
D. Hebenstreit, M. Fang, M. Gu, V. Charoensawan, A. van Oudenaarden, and S. A. Teichmann  
*Molecular Systems Biology* **7**; doi: 10.1038/msb.2011.28 (2011).

E. J. Steine, M. Ehrich, G. W. Bell, A. Raj, S. Reddy, A. van Oudenaarden, R. Jaenisch, and H. G. Linhart.  
Genes methylated by DNA methyltransferase 3b are similar in mouse intestine and human colon cancer.  
*Journal of Clinical Investigation* **121**, 1748 – S19 (2011). □

S. Itzkovitz and A. van Oudenaarden.  
Validating transcripts with probes and imaging technology.  
*Nature Methods* **8**, S12 – S19 (2011).

G. Balázsi, A. van Oudenaarden, and J. J. Collins.  
Cellular decision-making and biological noise: from microbes to mammals.  
*Cell* **144**, 910 – 925 (2011).

I. Topalidou, A. van Oudenaarden, and M. Chalfie.  
The *C. elegans* *aristaless/Arx* gene *alr-1* restricts variable gene expression.  
*Proc. Natl. Acad. Sci. USA* **108**, 4063 – 4068 (2011).

## 2010

B. Pando and A. van Oudenaarden.  
Coupling cellular oscillators - Circadian and cell division cycles in cyanobacteria.  
*Current Opinion in Genetics & Development*, **20**, 613 – 618 (2010).

H. Youk, A. Raj, and A. van Oudenaarden.  
Imaging single mRNA molecules in yeast.  
*Methods in Enzymology* **470**, 429 – 446 (2010).

M. Acar, B. F. Pando, F. H. Arnold, M. B. Elowitz, and A. van Oudenaarden.  
A general mechanism for network-dosage compensation in gene networks.  
*Science* **329**, 1656 – 1660 (2010).

H. Youk and A. van Oudenaarden.  
Altruistic defence.  
*Nature* **467**, 34 – 35 (2010).

R. Z. Tan and A. van Oudenaarden.  
Transcript counting in single cells reveals dynamics of rDNA transcription.  
*Molecular Systems Biology* **6**; doi:10.1038/msb.2010.14 (2010).

J. S. Tsang, M. S. Ebert, and A. van Oudenaarden.  
Genome-wide dissection of microRNA functions and cotargeting networks using gene set signatures.  
*Molecular Cell* **38**, 140 – 153 (2010).

Q. Yang, B. F. Pando, G. Dong, S. S. Golden, and A. van Oudenaarden.  
Circadian gating of the cell cycle revealed in single cyanobacterial cells.  
*Science* **327**, 1522 – 1526 (2010).

G. Dong, Q. Yang, Q. Wang, Y. Kim, T. Wood, K. W. Osteryoung, A. van Oudenaarden, and S. S. Golden.  
Elevated ATPase activity of KaiC applies a circadian checkpoint on cell division in *Synechococcus elongates*.  
*Cell* **140**, 529 – 539 (2010).

A. Raj, S. A. Rifkin, E. Andersen, and A. van Oudenaarden.  
Variability in gene expression underlies incomplete penetrance.  
*Nature* **463**, 913 – 918 (2010).

## 2009

H. Youk and A. van Oudenaarden.  
Growth landscape formed by perception and import of glucose in yeast.  
*Nature* **462**, 875 – 880 (2009).

S. Mukherji and A. van Oudenaarden.  
Synthetic biology: Understanding biological design from synthetic circuits.  
*Nature Review Genetics* **10**, 859 – 871 (2009).

J. Hanna, K. Saha, B. Pando, J. van Zon, C. J. Lengner, M. P. Creighton, A. van Oudenaarden, and R. Jaenisch.  
Direct cell reprogramming is a stochastic process amenable to acceleration.  
*Nature* **462**, 595 – 603 (2009).

D. Muzzey, C. Gomez-Uribe, J. T. Mettetal, and A. van Oudenaarden.  
A systems-level analysis of perfect adaptation in yeast osmoregulation.  
*Cell* **138**, 160 – 171 (2009).

D. Muzzey and A. van Oudenaarden.  
Quantitative time-lapse fluorescence microscopy on single cells.  
*Annual Review of Cell and Developmental Biology* **25**, 301 – 327 (2009).

A. M. Khalil, M. Guttman, M. Huarte, M. Garber, A. Raj, D. Rivea Morales, K. Thomas, A. Presser, B. E. Bernstein, A. van Oudenaarden, A. Regev, E. S. Lander, and J. L. Rinn.  
Many human large intergenic noncoding RNAs associate with chromatin-modifying complexes and affect gene expression.  
*Proc. Natl. Acad. Sci. USA* **106**, 11667 – 11672 (2009).

J. Gore, H. Youk, and A. van Oudenaarden.  
Snowdrift game dynamics and facultative cheating in yeast.  
*Nature* **459**, 253 – 256 (2009).

A. Raj and A. van Oudenaarden.  
Single-molecule approaches to stochastic gene expression.  
*Annual Review of Biophysics* **38**, 255 – 270 (2009).

G. Liti, D. M. Carter, A. M. Moses, J. Warringer, L. Parts, S. A. James, R. P. Davey, I. N. Roberts, A. Burt, V. Koufopanou, I. J. Tsai, C. M. Bergman, D. Bensasson, M. J. O'Kelly, A. van Oudenaarden, D. B. Barton, E. Bailes, A. N. Nguyen, M. Jones, M. A. Quail, I. Goodhead, S. Sims, F. Smith, A. Blomberg, R. Durbin, and E. J. Louis.  
Population genomics of domestic and wild yeasts.  
*Nature* **458**, 337 – 341 (2009).

S. A. James, M. J. O'Kelly, D. M. Carter, R. P. Davey, A. van Oudenaarden, and I. N. Roberts.  
Repetitive sequence variation and dynamics in the ribosomal DNA array of

*Saccharomyces cerevisiae* as revealed by whole genome resequencing.  
*Genome Research* **19**, 626 – 635 (2009).

J. Gore and A. van Oudenaarden.  
Synthetic biology: the yin and yang of nature.  
*Nature* **457**, 271 – 273 (2009).

## 2008

A. Raj and A. van Oudenaarden.  
Nature, nurture, or chance: Stochastic gene expression and its consequences.  
*Cell* **135**, 216 – 226 (2008).

A. Raj, P. van den Bogaard, S. A. Rifkin, A. van Oudenaarden, and S. Tyagi.  
Imaging individual mRNA molecules using multiple singly labeled probes.  
*Nature Methods* **5**, 877 – 879 (2008).

M. Acar, J. T. Mettetal, and A. van Oudenaarden.  
Stochastic switching as a survival strategy in fluctuating environments.  
*Nature Genetics* **40**, 471 – 475 (2008).

J. T. Mettetal, D. Muzzey, C. Gomez-Urbe, and A. van Oudenaarden.  
The frequency dependence of osmo-adaptation in *Saccharomyces cerevisiae*.  
*Science* **319**, 482 – 484 (2008).

A. Upadhyaya, M. Baraban, J. Wong, A. van Oudenaarden, and L. Mahadevan.  
Stochastic power-limited contraction dynamics of *Vorticella convallaria*: an ultrafast biological spring.  
*Biophysical Journal* **94**, 265 – 272 (2008).

## 2007

J. R. Chabot, J. M. Pedraza, P. Luitel, and A. van Oudenaarden.  
Stochastic gene expression out-of-steady-state in the cyanobacterial circadian clock.  
*Nature* **450**, 1249 – 1252 (2007).

J. T. Mettetal and A. van Oudenaarden.  
Necessary noise.  
*Science* **317**, 463 – 464 (2007).

B. B. Kaufmann, Q. Yang, J. T. Mettetal and A. van Oudenaarden.  
Heritable stochastic switching revealed by single cell genealogy.  
*PLoS Biology* **5**, 1973 – 1980 (2007).

J. Tsang, J. Zhu, and A. van Oudenaarden.  
MicroRNA-mediated feedback and feedforward loops are recurrent network motifs in mammals.  
*Molecular Cell* **26**, 753 – 767 (2007).

B. B. Kaufmann and A. van Oudenaarden.  
Stochastic gene expression: from single molecules to the proteome.  
*Current Opinion in Genetics and Development* **17**, 107 (2007).

H. N. Lim and A. van Oudenaarden.  
A multistep epigenetic switch enables the stable inheritance of DNA methylation states.  
*Nature Genetics* **39**, 269 (2007).

## 2006

D. Muzzey and A. van Oudenaarden.  
When it comes to decisions, myeloid progenitors crave positive feedback.  
*Cell* **126**, 650 (2006).

A. Samadani, J. T. Mettetal, and A. van Oudenaarden.  
Cellular asymmetry and individuality in directional sensing.  
*Proceedings of the National Academy of Sciences USA* **103**, 11549 (2006).

J. Tsang and A. van Oudenaarden.  
Exciting fluctuations: monitoring competence induction dynamics at the single-cell level.  
*Molecular Systems Biology* **2**, doi:10.1038/msb4100064 (2006).

J. T. Mettetal, D. Muzzey, J. M. Pedraza, E. M. Ozbudak, and A. van Oudenaarden.  
Predicting stochastic gene expression dynamics in single cells.  
*Proceedings of the National Academy of Sciences USA* **103**, 7304 (2006).

W. G. Tharp, R. Yadav, D. Irimia, A. Upadhyaya, A. Samadani, O. Hurtado, S. Y. Liu, S. Munisamy, D. M. Brainard, M. J. Mahon, S. Nourshargh, A. van Oudenaarden, M. G. Toner, M. C. Poznansky.  
Neutrophil chemorepulsion in defined interleukin-8 gradients in vitro and in vivo.  
*Journal of Leukocyte Biology* **79**, 539 (2006).

J. M. Pedraza and A. van Oudenaarden.  
Noise in gene regulatory networks.  
in 'Complex Systems Science in BioMedicine' (Kluwer Academic, New York, 2006).

## 2005

E. M. Ozbudak, A. Becskei, and A. van Oudenaarden.  
A system of counteracting feedback loops regulates Cdc42p activity during spontaneous cell polarization.  
*Developmental Cell* **9**, 565 (2005).

A. Becskei, B. B. Kaufmann, and A. van Oudenaarden.  
Contributions of low molecule number and chromosomal positioning to stochastic gene expression.  
*Nature Genetics* **37**, 937 (2005).

M. Acar, A. Becskei, and A. van Oudenaarden.  
Enhancement of cellular memory by reducing stochastic transitions.  
*Nature* **435**, 228 (2005).

J. M. Pedraza and A. van Oudenaarden.  
Noise propagation in gene networks.  
*Science* **307**, 1965 (2005).

## 2004

A. Upadhyaya and A. van Oudenaarden.  
Actin polymerization: forcing flat faces forward.  
*Current Biology* **14**, R467 (2004).

M. Thattai and A. van Oudenaarden.  
Stochastic gene expression in fluctuating environments.  
*Genetics* **167**, 523 (2004).

A. Becskei, M. G. Boselli, and A. van Oudenaarden.  
Amplitude control of cell-cycle waves by nuclear import.  
*Nature Cell Biology* **6**, 451 (2004).

B. Nguyen, A. Upadhyaya, A. van Oudenaarden, and M. P. Brenner.  
Elastic instability in growing yeast colonies.  
*Biophysical Journal* **86**, 2740 (2004).

E. M. Ozbudak, M. Thattai, H. N. Lim, B. I. Shraiman, and A. van Oudenaarden.  
Multistability in the lactose utilization network of *Escherichia coli*.  
*Nature* **427**, 737 (2004).

## 2003

N. Mittal, E. O. Budrene, M. P. Brenner and A. van Oudenaarden.  
Motility of *Escherichia coli* cells in clusters formed by chemotactic aggregation.  
*Proceedings of the National Academy of Sciences USA* **100**, 13259 (2003).

A. Upadhyaya and A. van Oudenaarden.  
Biomimetic systems for studying actin-based motility.  
*Current Biology* **13**, R734 (2003).

A. Upadhyaya, J. R. Chabot, A. Andreeva, A. Samadani and A. van Oudenaarden.  
Probing polymerization forces by using actin-propelled lipid vesicles.  
*Proceedings of the National Academy of Sciences USA* **100**, 4521 (2003).

## 2002

M. Thattai and A. van Oudenaarden.  
Attenuation of noise in ultrasensitive signaling cascades.  
*Biophysical Journal* **82**, 2943 (2002).

E. Ozbudak, M. Thattai, I. Kurtser, A. D. Grossman and A. van Oudenaarden.  
Regulation of noise in the expression of a single gene.  
*Nature Genetics* **31**, 69 (2002).

## 2001

M. Thattai and A. van Oudenaarden.  
Intrinsic noise in gene regulatory networks.  
*Proceedings of the National Academy of Sciences USA* **98**, 8614 (2001).

## 1999

A. van Oudenaarden and J. A. Theriot.  
Cooperative symmetry breaking by actin filament polymerization in a model for cell motility.  
*Nature Cell Biology* **1**, 493 (1999).

A. van Oudenaarden and S. G. Boxer.  
Brownian ratchets: a lipid bilayer supported by a patterned array.  
*Science* **285**, 1046 (1999).

L. A. Cameron, M. J. Footer, A. van Oudenaarden, and J. A. Theriot.  
Motility of ActA protein-coated microspheres driven by actin polymerization.  
*Proceedings of the National Academy of Sciences USA* **96**, 4908 (1999).

C. Bruder, L. I. Glazman, A. I. Larkin, J. E. Mooij, and A. van Oudenaarden.  
Phase transition in a chain of quantum vortices.  
*Physical Review B* **59**, 1383 (1999).

## 1998

S. G. Boxer, J. T. Groves, N. Ulman, A. van Oudenaarden, J. Johnson, L. Kung, P. Cremer.  
Manipulation of supported lipid bilayers.  
*Abstract of papers of the American Chemical Society* **216**, 254 (1998).

J. W. G. Wildoer, A. van Oudenaarden, C. J. P. M. Harmans, and H. van Kempen.  
Scanning tunneling microscope tip as a positionable contact: probing a Josephson-junction array at subkelvin temperatures.  
*Journal of vacuum science and technology B* **16**, 2837 (1998).

A. van Oudenaarden, B. van Leeuwen, M. P. M. Robbens, and J. E. Mooij.  
One-dimensional Mott localization of quantum vortices in Josephson-junction arrays.  
*Physical Review B* **57**, 11684 (1998).

A. van Oudenaarden, Yu. V. Nazarov, and J. E. Mooij.  
Giant higher harmonic generation in mesoscopic metal wires and rings interrupted by tunnel junctions.  
*Physical Review B* **57**, 8816 (1998).

A. van Oudenaarden, Michel H. Devoret, Yu.V. Nazarov & J.E. Mooij.  
Magneto-electric Aharonov-Bohm effect in metal rings.  
*Nature* **391**, 768 (1998).

## 1997

A. van Oudenaarden, M. H. Devoret, E. H. Visscher, Yu. V. Nazarov, and J. E. Mooij.  
Conductance fluctuations in a metallic wire interrupted by a tunnel junction.  
*Physical Review Letters* **78**, 3539 (1997).

## 1996

A. van Oudenaarden, S.J.K. Vardy, and J.E. Mooij.  
One-dimensional localization of quantum vortices in disordered Josephson junction arrays.  
*Physical Review Letters* **77**, 4257 (1996).

A. van Oudenaarden and J.E. Mooij.  
One-dimensional Mott insulator formed by quantum vortices in Josephson junction arrays.  
*Physical Review Letters* **76**, 4947 (1996).

A. van Oudenaarden and J. E. Mooij.  
Quantum vortices in periodic and disordered one-dimensional lattices.  
in 'Nanowires', NATO ASI Series.  
edited by P. A. Serena and N. Garcia, 373 (1997).

A. van Oudenaarden, S. J. K. Vardy, and J. E. Mooij.  
Bloch vortices in one-dimensional Josephson junction arrays.  
in 'Proceedings of the 21st international conference on low temperature physics,  
(Prague, 1996);  
also published in *Czechoslovak Journal of Physics* **46** Suppl. S2, 707 (1996).

A. van Oudenaarden and J. E. Mooij.  
One-dimensional Mott insulator formed by quantum vortices in Josephson junction arrays.  
in 'Proceedings of 'Localization 96', edited by T. Dietl (Jaszowiec, Poland, 1996), p. 79.

## 1995

A. van Oudenaarden, S. L. Yeung, and J. E. Mooij.  
Vortex dynamics in small arrays of underdamped Josephson junctions.  
in 'Macroscopic quantum phenomena and coherence in superconducting networks',  
edited by C. Giovanella and M. Tinkham (World Scientific, Singapore, 1995).

## 1994

M. de Jong, A. van Oudenaarden, J. Sietsma, M. Th. Rekveldt, and A. van den Beukel.  
Internal stresses in amorphous FeNiB studied by neutron depolarization.  
*Acta Physica Hungarica* **75**, 91 (1994).

A. van Oudenaarden, M. de Jong, J. Sietsma, M. Th. Rekveldt, and A. van den Beukel.  
Internal stress distribution in amorphous FeNiB studied by field dependent neutron depolarization.  
*Journal of Magnetism and Magnetic Materials* **133**, 251 (1994).