

# ANDREW G. CLARK, PHD

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Postdoctoral Fellow, Institut Curie

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## EDUCATION

9.2008-3.2013     **Technische Universität Dresden / Max Planck Institute for Molecular Cell Biology and Genetics, Dresden, Germany**

*Ph.D.*

- Department: Biology
- Final Grade: *summa cum laude*

9.2003-5.2007     **University of Wisconsin-Madison, Madison, Wisconsin, USA**

*Bachelor of Science, with honors*

- Major: Molecular Biology
- Cumulative GPA: 3.97/4.00

## RESEARCH EXPERIENCE

9.2014-Present     **Postdoctoral Fellow**  
**Institut Curie, Subcellular Structure and Cellular Dynamics Unit**  
**(UMR 144), Paris, France**

Regulation of Cell Migration during Tumor Invasion and Metastasis

Advisor: Dr. Danijela Matic Vignjevic

5.2013-8.2014     **Postdoctoral Fellow**  
**MRC Laboratory of Molecular Cell Biology (LMCB), University College**  
**London, London, UK**

Regulation of Actomyosin Cortex Thickness and Organization

Advisor: Professor Ewa K. Paluch

11.2008-5.2013     **Predocctoral Research Assistant (PhD Student)**  
**Max Planck Institute for Molecular Cell Biology and Genetics (MPI-CBG),**  
**Dresden, Germany**

Thickness, Dynamics and Mechanics of the Actomyosin Cortex

Advisor: Dr. Ewa K. Paluch

- 9.2004-8.2008      **Undergraduate Research Assistant / Technician**  
**Dept. of Zoology, University of Wisconsin-Madison**, Madison, Wisconsin, USA
- Identification of Novel Small-molecule Inhibitors of Cytokinesis and Wound Healing;  
Cooperative Multicellular Wound Healing in the *Xenopus* Embryo
- Advisor: Professor William M. Bement
- 8.2007              **Research Assistant**  
**Center for Cell Dynamics, Friday Harbor Labs**, Friday Harbor, Washington, USA
- Characterization of Small-molecule Inhibitors of Cytokinesis in Echinoderms
- Advisors: Professors William M. Bement, George von Dassow and Victoria Foe
- 9.2003-5.2004      **Undergraduate Research Assistant**  
**Dept. of Animal Health and Sciences, University of Wisconsin-Madison**,  
Madison, Wisconsin, USA
- The Relationship between Chronic Salt Loading and Serotonin Receptor Expression
- Advisor: Professor Mark S. Brownfield

## PUBLICATIONS

- Clark AG**<sup>†</sup>, Maitra A<sup>†</sup>, Jacques C, Simon A, Pérez-González C, Trepas X, Voituriez R and Vignjevic DM (2020) Viscoelastic relaxation of collagen networks provides a self-generated directional cue during collective migration. *bioRxiv* doi: <https://doi.org/10.1101/2020.07.11.198739>
- Staneva R<sup>†</sup>, El Marjou F, Barbazan J, Krndija D, Richon S, **Clark AG**<sup>\*†</sup>, and Vignjevic DM\* (2019) Cancer Cells in the Tumor Core Exhibit Spatially Coordinated Migration Patterns. *Journal of Cell Science*. **132(6)**:jcs220277. [4]
- Clark AG**<sup>†</sup>, Simon A, Aizel K, Bibette J, Bremond N, and Vignjevic DM (2018) 3D Cell Migration in the Presence of Chemical Gradients using Microfluidics. In: Piel M., Fletcher, D. and J. Doh (1.ed) *Methods in Cell Biology - Microfluidics in Cell Biology Part B: Microfluidics in Single Cells*. Elsevier/Academic Press, Cambridge, MA, USA. [2]
- Aizel K\*, **Clark AG**<sup>\*</sup>, Simon A, Geraldo S, Funfak A, Vargas P, Bibette J, Vignjevic DM and Bremond N (2017) A Tuneable Microfluidic System for Long Duration Chemotaxis Experiments in a 3D Collagen Matrix. *Lab on a Chip*. **17(22)**:3851-3861. [12]
- Attieh Y, **Clark AG**, Grass C, Richon S, Elkhatib N, Betz T, Gurchenkov B and Vignjevic DM (2017) Cancer-associated Fibroblasts Lead Tumor Invasion through Integrin  $\beta 3$  Dependent Fibronectin Assembly. *Journal of Cell Biology*. **216(11)**:3509-3520. [80]
- Chugh P\*, **Clark AG**<sup>\*†</sup>, Smith MB\*, Cassani DAD, Ragab A, Roux PP, Charras G, Salbreux G and Paluch EK<sup>†</sup> (2017) Actin Cortex Architecture Regulates Cell Surface Tension. *Nature Cell Biology*. **19(6)**:689-697. [130]
- Clark AG**<sup>†</sup> and Vignjevic DM (2015) Modes of Cancer Cell Invasion and the Role of the Microenvironment. *Current Opinion in Cell Biology*. **36**:13-22. [470]
- Clark AG**<sup>†</sup>, Wartlick O, Salbreux G and Paluch EK<sup>†</sup> (2014) Stresses at the Cell Surface during Animal Cell Morphogenesis. *Current Biology*. **24(10)**:R484-R494. [84]

**Clark AG**, Dierkes K and Paluch EK (2013) Monitoring Actin Cortex Thickness in Live Cells. *Biophysical Journal*. **105(3)**:570-580. [158]

**Clark AG**, Sider JR, Verbrugghe K, Fenteany G, von Dassow G and Bement WM (2012) Identification of Small Molecule Inhibitors of Cytokinesis and Single Cell Wound Repair. *Cytoskeleton*. **69(11)**:1010-1020. [13]

**Clark AG** and Paluch E (2011) Mechanics of Cell Shape Regulation During the Cell Cycle. In: Kubiak JZ (1.ed) Results and Problems in Cell Differentiation - Cell Cycle in Development. Springer, Berlin, Germany. [59]

**Clark, AG**, Miller, AL, Vaughan, E, Yu, H-YE, Penkert, R, and Bement WM (2009) Integration of Single and Multicellular Wound Responses. *Current Biology*. **19**:1389-1395. [110]

Bement, WM, Yu, H-YE, Burkel, BM, Vaughan, EM, and **Clark AG** (2007) Rehabilitation and the Single Cell. *Current Opinion in Cell Biology*. **19**:95-100. [53]

\*These authors contributed equally to this work, †Corresponding author(s).  
[Number of citations (via Google Scholar, as of 13 July 2019)]

## **SELECTED/INVITED TALKS**

“Collective cell dynamics in intestinal cancer and homeostasis” Invited Speaker (07.2019, Universitätsklinikum Erlangen, Germany)

“Dynamics and mechanics of collective cancer cell migration” Horizons in Biology - Beyond the (biological) borders (04.2019, Münster, Germany)

“Dynamics and mechanics of collective cancer cell migration” Symposium for the Science of Light (03.2019, Erlangen, Germany)

“Mechanisms of collective cell migration and the influence of the microenvironment” Physics of Cancer (10.2017, Leipzig, Germany)

“Regulation of collective cancer cell migration” Labex CelTisPhyBio Workshop: Cytoskeleton in 3D (4.2017, Paris, France)

“Regulation of actomyosin cortex architecture in animal cell morphogenesis” Annual Meeting of the American Society for Cell Biology (12.2013, New Orleans, Louisiana, USA)

“Monitoring actin cortex thickness in live cells” Conference: Mechanical Manipulations and Responses at the Scale of Cells and Beyond (4.2013, Bangalore, India)

“Thickness and dynamics of the actomyosin cortex” Annual Meeting of the German Society for Cell Biology (3.2012, Dresden, Germany)

“Dynamics and organization of the actomyosin cortex” Circle Meeting on Biophysics (4.2011, Saarbrücken, Germany).

“Mechanics and regulation of cortical actin turnover” Workshop: Mechanisms of cytoskeleton dynamics and intracellular trafficking (10.2010, Warsaw, Poland).

## POSTERS

“Dynamics and mechanics of collective cell migration” Symposia on Tumor Biology: from basic biology to disease (12.2018, Lisbon, Portugal)

“Integrin function during collective and single-cell migration” Forces in cancer: interdisciplinary approaches in tumour mechanobiology (6.2018, London, UK)

“Regulation of collective cell chemotaxis during tumor invasion” The Invadosome Consortium: Integrated mechano-chemical signals during invasion (10.2015, Saint-Paul-de-Vence/Nice, France)

“Regulation of collective cell chemotaxis during tumor invasion” Labex CelTisPhyBio Workshop: Cell Motility (3.2015, Paris, France)

“Regulation of the thickness and organization of the cellular actin cortex” Annual Meeting of the American Society for Cell Biology (12.2013, New Orleans, Louisiana, USA)

“Monitoring actin cortex thickness in live cells” European Cytoskeletal Forum: The Cytoskeleton in Tissue Repair and Diseases (9.2013, Fribourg, Switzerland)

“Monitoring actin cortex thickness in live cells” Annual Meeting of the American Society for Cell Biology (12.2012, San Francisco, California, USA)

“Thickness and dynamics of the actomyosin cortex” Circle Meeting on Biophysics (4.2012, Paris, France)

“Thickness and dynamics of the actomyosin cortex” Annual Meeting of the American Society for Cell Biology (12.2011, Denver, Colorado, USA)

“Mechanics, dynamics and organization of the actomyosin cortex” Gordon Research Conference: Motile & Contractile Systems (6/7.2011, New London, New Hampshire, USA)

“Roles for Myosin-2 in cell surface tension and cortical actin turnover” The Cellular Cytoskeleton: Common Organizing Principles in Mitosis, Migration and Cell Polarization (6.2010, Pingree Park, Colorado, USA)

“Roles for Myosin-2 in cell surface tension and cortical actin turnover” Circle Meeting on Biophysics (4.2010, Amsterdam, The Netherlands)

“A pipeline for exploring regulators of cortex tension” EMBO Conference: Physics of the Cell (9.2009, Primosten, Croatia)

“Regulation of the cell cortex and cellular mechanics” Physical Biology Circle Meeting (4.2009, Dresden, Germany)

## TEACHING EXPERIENCE

*8.2016-Present*      **Course Instructor (undergraduate course)**  
“**Scientific English,**” FdV/CRI, Université Paris Descartes,  
Paris, France

*4.2011-7.2011*      **Course Instructor/Teaching Assistant (undergraduate course)**  
“**Physics in Biology,**” Technische Universität Dresden,  
Dresden, Germany

- 9.2009-11.2009      **Practical Course Instructor (undergraduate/beginning PhD student courses)**  
**“Methods and analysis of FRAP experiments,” Max Planck Institute for**  
**Molecular Cell Biology and Genetics,**  
Dresden, Germany
- 9.2006-5.2007      **Course Instructor (undergraduate course)**  
**Undergraduate Research Scholars Program, University of Wisconsin-Madison,**  
Madison, Wisconsin, USA

## **SUPERVISION EXPERIENCE**

- 1.2018-3.2018      **Cécile Jacques, Masters Student (co-supervised w. Danijela Vignjevic)**  
Institut Curie
- 6.2017-8.2017      **Kyu Sang Han, Undergraduate (co-supervised w. Danijela Vignjevic)**  
Johns Hopkins University / Institut Curie
- 6.2015-4.2017      **Anthony Simon, Research Engineer (co-supervised w. Danijela Vignjevic)**  
Institut Curie
- 9.2011-8.2014      **Priyamvada Chugh, PhD Student (co-supervised w. Ewa Paluch)**  
Max Planck Institute for Molecular Cell Biology and Genetics/MRC Laboratory of  
Molecular Cell Biology (LMCB), University College London
- 2.2010-4.2011      **Steve Simmert, Master’s Student (co-supervised w. Ewa Paluch)**  
Max Planck Institute for Molecular Cell Biology and Genetics

## **HONORS AND AWARDS**

- 2015-2017      Long-Term Postdoctoral Fellowship, European Molecular Biology Organization (EMBO)
- 2014              Curie Foreign Postdoc Fellowship (*declined*), Institut Curie
- 2013              Poster Prize, European Cytoskeletal Forum
- 2012              Travel Award, Dresden International Graduate School for Biomedicine and  
Bioengineering (DIGS-BB)
- 2011              Predoctoral Travel Award, American Society for Cell Biology (ASCB)
- 2003-2007      Dean’s List  
Wisconsin Academic Excellence Scholars Program  
William F. Vilas Scholarship  
Medical Scholars Statewide Summer Research Fellowship

## TECHNICAL SKILLS

- **Culture and Model Systems:** mammalian cell lines, primary mouse gut organoids, *Xenopus laevis*, *Dendroaster excentricus*
- **Microscopy:** Long term optical timelapse, 4D high-resolution confocal
- **Analysis:** Image analysis (segmentation, quantitative data extraction, batch processing), Multi-dimensional image processing, Model fitting and analysis, High-content data visualization, Creation of graphical user interfaces
- **Cell Biology:** Transfection (various delivery systems), Microinjection, Immunohistochemistry, Functional assays for screening
- **Biophysics:** Micropipette aspiration, Traction force microscopy
- **Molecular Biology and Biochemistry:** Restriction enzyme- and recombination-based cloning, Western blotting, *in vitro* mRNA synthesis
- **Microfluidics:** Soft lithography fabrication, Preparation of PDMS microfluidic molds, Use of syringe pump systems for live cell experiments

## RELEVANT COURSEWORK

03.2017                      Laboratory Management, EMBO/Leadership Sculptor, Heidelberg, Germany

04.2019                      Interviewing Skills for Grant Applications, Institut Curie/Scriptorium, Paris, France

## PROGRAMMING LANGUAGES

Python - Advanced

Matlab - Intermediate

Fiji/ImageJ Macro - Intermediate

LaTeX - Intermediate

## SPOKEN LANGUAGES

English - Native Speaker

German - Fluent

French - Intermediate

Spanish - Basic