

## **Brian S. DeDecker, PhD**

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### **Personal Data**

Address: University of Colorado at Boulder  
MCD Biology  
347 UCB  
Boulder, CO 80309

Telephone: (617) 510-9179  
E-mail: dedecker@colorado.edu

### **Education**

1991 **BS**, The University of Illinois (UIUC), Urbana, IL  
Research Advisor: Klaus Schulten, PhD  
(deceased)

1997 **PhD**, Yale University, New Haven, CT  
Department of Molecular Biophysics and Biochemistry  
Research Advisor: Paul B. Sigler, MD, PhD  
(deceased)

### **Academic Employment History**

#### **Faculty Appointment**

2015 - present Director of Undergraduate Research  
Teaching Associate Professor  
University of Colorado at Boulder  
MCD Biology Department

2006 - 2014 Assistant Research Professor  
University of Colorado at Boulder  
MCD Biology Department

#### **Independent Fellow**

1999 – 2006 Harvard Institute of Chemistry and Cell Biology (ICCB)  
Harvard Medical School, Boston, MA  
Mentor: Timothy J. Mitchison, PhD  
Project Collaborator: Spyros Artavanis-Tsakonas, PhD  
Project Collaborator: Don C. Wiley, PhD  
(deceased)

#### **Post-Doctoral Research**

1997 - 1999 Cambridge Centre for  
Protein Engineering, MRC Centre  
University of Cambridge, Cambridge, England  
Mentor: Sir Alan R. Fersht, PhD

## **Service**

University of Colorado:

2018 - 2022 Faculty Advisory Board, McNair Scholars Program

MCD Biology Department:

2017 - 2022 Co-Director of the Beckman Scholars Program

2015 - 2022 Chair of MCDB Scholarship Committee

2015 - 2022 Member and Chair of Honors Committee

2015 - 2020 Member of UGCOM Committee

2008 - 2012 Member and Co-Chair of the Graduate Recruitment Committee

2010 Member of the Graduate Qualifying Exam Committee

## **Fellowships, Honors and Awards**

1997 Hitchings-Elion Post-doctoral Fellowship (Burroughs Wellcome Fund)

1996 Nominated Speaker - Yale University  
Graduate Student Research Symposia

1991 Pre-doctoral Training Grant (National Institute of Health)

1990 Howard Hughes Undergraduate Research Award

## **Grants**

Lab Venture Challenge

Venture Partners at CU Boulder

“Seedling Biosystems - Sprouting therapies from American farms”

\$62,500 (2021) (PI)

Lab Venture Challenge

Venture Partners at CU Boulder &

Colorado Office of Economic Development & International Trade (OEDIT)

“Gene-Lock - A Novel Approach to Gene Assembly”

\$125,000 (2020) (PI)

Beckman Scholars University Grant (awarded twice)

Support for undergraduate researchers across campus

\$156,000 (2017 - 2020 & 2020 - 2023) (Co-Director)

NIH R03

"Unglued Glia, a Seven Transmembrane Protein Essential for Glia Differentiation"  
\$100,000 total direct costs, NS075458-01, (2011 - 2012) (PI)

Proof of Concept Grant

(Technology Transfer Office, University of Colorado)

"A therapeutic antibody that strips autoantigenic peptides from class II MHC",  
\$23,401 total award, (2008) (PI)

Juvenile Diabetes Research Foundation (JDRF) innovative grant

"A therapeutic antibody that strips peptide from class II MHC",  
\$110,000 total award, (2007 - 2008) (PI)

Juvenile Diabetes Research Foundation

(JDRF) International Research Grant, (2002) (Co-PI)

## **Teaching**

### **Classroom teaching:**

- 2019 - 2022    **Instructor.** Synthetic Biology Research, CU-Boulder,  
upper division undergraduate laboratory course  
designed and taught course (10-12 students)  
6 full semesters
- 2021-2022    **Instructor.** Molecular Evolution, CU-Boulder,  
upper division undergraduate course  
designed and taught course (20-30 students)  
2 full semesters
- 2015 - 2021    **Instructor.** Introduction to Molecular Biology, CU-Boulder,  
lower division undergraduate course  
designed and taught course (60-70 students)  
7 full semesters
- 2018 - 2020    **Instructor.** Honors Science Communication Course, CU-Boulder,  
upper division undergraduate course  
designed and taught course (6-10 students)  
2 full semesters
- 2008 - 2020    **Instructor.** Evolution and Development, CU-Boulder,  
upper division undergraduate course  
designed and taught course (20-30 students)  
11 full semesters
- 2008 - 2014    **Instructor.** Graduate Core Course (statistics section), CU-Boulder,  
designed and taught lectures on statistics (12-20 students)  
2 lectures per semester (7 semesters)

2011 - 2013 **Instructor.** Graduate Core Course (development section), CU-Boulder, designed and taught lectures on development (12-20 students)  
2 lectures per semester (3 semesters)

2013 **Instructor.** Graduate Methods and Logic, CU-Boulder, survey of current literature course  
designed and taught (12-20 students)  
1 half semester

1995 - 1997 **Teaching Assistant.** Biochemistry, Yale University  
undergraduate course  
led sections of larger class (30-40 students)  
2 semesters as teaching assistant

**Non classroom teaching:**

2016-2022 **Team Mentor.** iGEM (international Genetically Engineered Machines)  
Mentored the University's iGEM team  
(6-10 undergraduates per year)

## Patents

**Brian DeDecker** & Simon Kalmus (2022)

Enhanced Production of Squalene in Plant Systems, provisional patent filed

**Brian DeDecker** & Simon Kalmus (2022)

Non-Endogenous Production of Bovine Casein Micelles in Plant Systems, provisional patent filed

**Brian DeDecker** & Simon Kalmus (2021)

Nonendogenous Production of Cannabinoids and Cannabinoid Precursor Compounds in Plant Systems, provisional patent filed

**Brian DeDecker**, Madison Adamthwaite, Nathaniel Moore, Lauren VanHousen & McKayla Vlasity (2021)

Novel Systems, Methods and Compositions for the Direct Synthesis of Sticky Ended Polynucleotides, US Application 62858163, Filed June 6th, 2019, patent pending

## Publications

### **Publications as Faculty (University of Colorado):**

**Brian S. DeDecker** (2017). The Polymerase Step Reaction (PSR) Method for Gene and Library Synthesis. *Methods in Molecular Biology* 1472, 129-138  
Chapter in Methods in Molecular Biology Series (Synthetic DNA)

Zhou-Bin Lee, Christopher Firnhaber, Jesse Clarke and **Brian S. DeDecker\*** (2015).  
Gene and library synthesis without amplification: polymerase step reaction (PSR).  
*BioTechniques* 59:3, 163-166 \* Corresponding Author

Philippos Mourikis, Robert J. Lake, Christopher B. Firnhaber and **Brian S. DeDecker\***  
(2010). Modifiers of Notch Transcriptional Activity Identified by Genome-Wide  
RNAi. *BMC Developmental Biology* 10:107 \* Corresponding Author

### **Publications as an Independent Fellow at the ICCB (Harvard University):**

Stephen L. De Wall, Corrie Painter, Jennifer D. Stone, Rajintha Bandaranayake, Don C. Wiley, Timothy J. Mitchison, Lawrence J. Stern and **Brian S. DeDecker\*** (2006).  
Noble metals strip peptides from class II MHC proteins. *Nature Chemical Biology* 2,  
197-201 \* Corresponding Author

News and Views: *Nature Chemical Biology* 2, 178-179

Featured in *The Economist* magazine, March 2<sup>nd</sup>, 2006

Faculty of 1000 article factor (FFa): 14

Natarajan Venkatesh, Yan Feng, **Brian DeDecker**, Patrick Yacono, David Golan,  
Timothy Mitchison and Frank McKeon (2004). Chemical genetics to identify NFAT  
inhibitors: Potential of targeting calcium mobilization in immunosuppression.  
*Proc. Natl. Acad. Sci. USA* 101, 8969-8974

Review Article:

**Brian S. DeDecker** (2000). Allosteric drugs: thinking outside the active-site box. *Chemistry & Biology* 7, 103-107

**Publications as a Postdoctoral Fellow with Sir Alan Fersht, PhD  
(University of Cambridge):**

Assaf Friedler, **Brian S. DeDecker**, Stefan M. V. Freund, Caroline Blair, Stefan Rüdiger and Alan R. Fersht (2004). Structural Distortion of p53 by the Mutation R249S and its Rescue by a Designed Peptide: Implications for "Mutant Conformation". *Journal of Molecular Biology* 336, 187-196

Faculty of 1000 article factor (FFa): 11

Penka V. Nikolova, Kam-Bo Wong, **Brian S. DeDecker**, Julia Henckel, and Alan R. Fersht (2000). Mechanism of rescue of common p53 cancer mutations by second-site suppressor mutations. *The EMBO Journal* 19, 370-378

Kam-Bo Wong, **Brian S. DeDecker**, Stefan M. Freund, Mark R. Proctor, Mark Bycroft, and Alan R. Fersht (1999). Hot-spot Mutants of p53 Core Domain Evince Characteristic Local Structural Changes. *Proc. Natl. Acad. Sci. USA* 96, 8438-8442

Alex N. Bullock, Julia Henckel, **Brian S. DeDecker**, Christopher M. Johnson, Penka V. Nikolova, Mark R. Proctor, David P. Lane, and Alan R. Fersht (1997). Thermodynamic stability of wild-type and mutant p53 core domain. *Proc. Natl. Acad. Sci. USA* 94, 14338-14342

**Publications as a PhD Student with Paul Sigler, MD, PhD  
(Yale University):**

Ronan O'Brien, **Brian S. DeDecker**, Karen G. Fleming, Paul B. Sigler and John E. Ladbury (1998). The effects of salt on the TATA Binding Protein-DNA interaction from a Hyperthermophilic Archaeon. *Journal of Molecular Biology* 279, 117-125

Peter F. Kosa, Gourishankar Ghosh, **Brian S. DeDecker**, and Paul B. Sigler (1997). The 2.1-Å crystal structure of an archaeal preinitiation complex: TATA-box-binding protein/transcription factor (II)B core/TATA-box. *Proc. Natl. Acad. Sci. USA* 94, 6042-6047

**Brian S. DeDecker**, Ronan O'Brien, Patrick J. Fleming, James H. Geiger, Steven P. Jackson, and Paul B. Sigler (1996). The crystal structure of a hyperthermophilic archaeal TATA-box binding protein. *Journal of Molecular Biology* 264, 1072-1084

May Han, **Brian S. DeDecker**, and Steven O. Smith (1993). Localization of the retinal protonated Schiff base counterion in rhodopsin. *Biophysical Journal* 65(2), 899-906