

**Prof. Dr. sc. nat. Christoph Weder**  
Curriculum Vitae, November 13, 2017

**Personal** Swiss and Irish Citizen; Born July 30, 1966; Married, 3 Children (ages 18, 21, 23)  
**Researcher IDs** ORCID: 0000-0001-7183-1790; Google Scholar: Christoph Weder  
**Web** ami.swiss bioinspired-materials.ch  
**Work Address** University of Fribourg  
Adolphe Merkle Institute  
Chemin des Verdiers 4  
1700 Fribourg, Switzerland  
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**Core Research Expertise and Interests: Synthesis of Functional Polymers**

Design, synthesis, processing, investigation of structure-property relationships, and application of functional polymers, notably stimuli-responsive polymers, supramolecular polymer systems, polymer nanocomposites, biomimetic and bio-inspired polymers, polymers with unusual optical and mechanical properties.

**Academic Positions**

2014 - present **Director** National Competence Center in Research (NCCR) Bio-Inspired Materials  
2010 - present **Director** Adolphe Merkle Institute, University of Fribourg, Switzerland  
2009 - present **Professor of Polymer Chemistry and Materials**  
Adolphe Merkle Institute, University of Fribourg, Switzerland  
2010 - present **Adjunct Professor** Dept. of Macromolecular Science and Engineering,  
Case Western Reserve University (CWRU), Cleveland OH, USA  
2003 - present **Visiting Professor**  
Petrochemical College, Chulalongkorn University, Bangkok, Thailand  
2007 - 2010 **Professor** (2008-2010: **F. Alex Nason Professor**)  
Dept. of Macromolecular Science and Engineering and Dept. of Chemistry CWRU  
2001 - 2007 **Associate Professor**  
Dept. of Macromolecular Science and Engineering and Dept. of Chemistry CWRU  
2005 - 2008 **Research Scientist**  
Louis Stokes Cleveland Department of Veterans Affairs Medical Center  
1995 - 2000 **Senior Research Associate** and **Independent Lecturer** (“Privatdozent”)  
Department of Materials, ETH Zürich, Switzerland, Group of Prof. P. Smith  
1994 - 1995 **Postdoctoral Research Fellow**  
Dept. of Chemistry, MIT, Cambridge, USA, Advisor: Prof. M.S. Wrighton  
1989 - 1994 **Research and Teaching Assistant**  
Departments of Chemistry and Materials, ETH Zurich, Switzerland

## Academic Education

- 1995 - 2000     **Habilitation**, Degree awarded: *Venia Legendi* for *Photofunctional Polymers*  
Department of Materials, ETH Zürich, Switzerland, Group of Prof. P. Smith  
Habilitation: “Polarizing Light with Polymers”
- 1990 - 1994     **Dissertation**, Degree awarded: Doctor of Natural Sciences (“Dr. sc. nat.”)  
Department of Materials, ETH Zürich, Switzerland, Advisor: Prof. U.W. Suter  
Thesis: “New Polyamides with Stable Nonlinear Optical Properties”
- 1990 - 1992     **Education as Chemistry Teacher**, Degree awarded: High School and College  
Teacher License (“Fachausweis für das Höhere Lehramt”)  
Institute for Behavioural Sciences, ETH Zürich, Switzerland
- 1985 - 1990     **Undergraduate Studies in Chemistry**, Degree awarded: Masters Degree in  
Chemistry (“Dipl. Chem. ETH”), Thesis: “Synthesis of Cross-Linkable Aramids”  
Department of Chemistry, ETH Zürich, Switzerland, Advisor: Prof. U.W. Suter

## Pre-College Education

- 1980 - 1985     High School at Kantonsschule Enge, Zürich, Switzerland  
Degree awarded: Baccalaureate (“Eidg. Matura Typ E, Wirtschaft”)
- 1972 - 1980     Elementary and Secondary Schools in Mühlheim a. Main, Germany (1972 -  
1974) and Thalwil, Switzerland (1974 - 1980)

## Military

- 1985 – 2004     Swiss Army Service in the rank of a soldier

## Industrial Experiences

- 2010 - present   **Member of Board of Directors**  
Tech Transfer Fribourg
- 2000 - present   **Consultant for Several Multinational Clients**
- 1994 - 2010     **Member of Board of Directors**  
Gel Instrumente AG, Thalwil, Switzerland
- 1999 - 2002     **Founding Member and Member of Board of Directors**  
Omlidon Technologies LLC, Zurich, Switzerland

## Awards and Recognition

- 2017             Fellow of the Polymer Division of the American Chemical Society
- 2017             Elected Member of the Swiss Academy of Engineering Sciences (SATW)
- 2011             ERC Advanced Grant (€2,000,000)
- 2008             F. Alex Nason Professor of Engineering at Case Western Reserve University
- 2008             Case School of Engineering Research Award
- 2007, 2008, 2009 Finalist Bruce Jackson Award for Excellence in Undergraduate Mentoring
- 2005             National Science Foundation Special Creativity Award (\$ 192,000)
- 2002             DuPont Young Professor Award (\$ 75,000)
- 2002             3M Non-Tenured Faculty Award (\$ 15,000)
- 2001             DuPont Aid to Education Award (\$ 10,000)
- 1994             Swiss National Science Foundation Research Fellowship (CHF 45,000)

## Publication Statistics

Author of >225 peer-reviewed scientific articles, 26 journal covers, ~75 non-reviewed scientific articles or preprints, 18 book chapters. (Co)Editor of 2 books and 3 journal special issues. Co-inventor of 18 patent families. ~11'400/14'300 ISI/Google Scholar citations. H-index = 58/63 (ISI/Google Scholar). Current citation rate >1'500/2000 cites/year (ISI/Google Scholar).

## Major scientific contributions

Developed new approaches to nonlinear optical polymers

Pioneered the use of poly(*p*-phenylene ethynylene)s as semiconducting materials

Invented light-polarizing fluorescent polymers based on a polarizing energy transfer process

Introduced several new approaches for mechanochromic polymers

Conceived and realized sea-cucumber mimicking mechanically adaptive polymers

Contributed to the understanding of processing-structure-property relations of polymer nanocomposites with cellulose nanocrystals

Pioneered the use of (metallo)supramolecular polymers as stimuli-responsive materials

Exploited polymer multilayer technology to create lasers and data storage systems

Established supramolecular polymers as light-healable materials

Demonstrated novel approaches for low-power upconversion in polymers

## Technologies Developed or under Development

Terabyte scale optical data storage media. Under Development by Folio Photonics LLC.

Security feature for banknotes. Commercialized by Landqart AG.

Dielectric method to determine curing of reactive resins. Commercialized by Gel Instrumente AG.

Photochromic fishing lines. Commercialized by Pure Fishing Co.

## Editorship, Guest Editorship

2011 - present Associate Editor *ACS Macro Letters*

2010 - present Co-Editor RSC Book Series *Polymer Chemistry*

2016 Guest Editor *Chem. Soc. Rev.* Special issue *Bioinspired Surfaces and Materials*

2011 Guest Editor *J. Mater. Chem.* Special issue *Mechanically Responsive Polymers*

2009 Guest Editor *Chimia* Special issue *Swiss Scientists Abroad*

2006 Editor *Advances in Polymer Science* Special issue *Poly(arylene ethynylene)s*

2000 Editor *Macromolecular Symposia* Issue on *Polymers in Display Applications*

## Editorial Advisory Boards

2013 - present Editorial Advisory Board *Journal of Materials Chemistry C*

2008 - present Advisory Board *International Symposium on Stimuli-Responsive Polymers*

2006 - present International Advisory Board *Macromolecular Chemistry and Physics*

2006 - present International Advisory Board *Macromolecular Rapid Communications*

2001 - present Editorial Board *Journal of Applied Polymer Science*

Terms completed *RSC Advances, Polymer Bulletin, Polymer Chemistry, ACS Applied Materials & Interfaces, Macromolecules, Journal of Materials Chemistry, Journal of Inorganic and Organometallic Polymers and Materials*

### **Professional Leadership** (last 5 years)

- 2017 - present Co-PI (Swiss Lead) PIRE (Partnerships for International Research and Education) Bio-Inspired Materials and Systems. This international collaboration will involve some 20 PIs and 15 PhD students at Case Western Reserve University (Cleveland OH, USA), the University of Chicago (USA), and the AMI.
- 2014 - present Director National Competence Center in Research (NCCR) Bio-Inspired Materials. Initiated, planned, and lead this center with 16 research groups and >90 researchers at 4 Universities (U. Fribourg, U. Geneva, EPFL, ETHZ).
- 2013 - present Board of Directors Polymer and Colloid Division, Swiss Chemical Society
- 2013 - 2016 Expert of the Swiss Academy of Technical Sciences (SATW)
- 2010 - present Director Adolphe Merkle Institute. (Re)Built this department-like institute, which at present counts 5 research groups, ca. 100 employees, and an annual budget of >CHF 10 Mio.

### **Other Professional Affiliations**

American Chemical Society (ACS), Division Member: POLY and PMSE; Materials Research Society (MRS); Swiss Chemical Society (SCS).

### **Co-Organizer / Member Scientific Organizing Committee** (last 5 years)

International Conference on Organic and Polymer Synthesis (Guangzhou, China 2018); 10<sup>th</sup> International Conference on f-Element ICFE10 (2018), Soft matter interfaces: from biology to engineering applications (2017), Biointerfaces (2016).

### **Reviewer Scientific Journals** (last 5 years)

*ACS Appl. Int., Adv. Funct. Mater., Adv. Mater., Angew. Chem., Appl. Phys. Lett., Biomacromol., Chem. Eur. J., Chem. Asian. J., Chem. Comm., Chem. Mater., Chem. Soc. Rev., Eur. J. Org. Chem., J. Appl. Phys., J. Appl. Polym. Sci., J. Am. Chem. Soc., J. Chem. Phys., J. Mater. Chem., J. Mater. Sci., J. Polym. Sci. A & B, Langmuir, Macromol. Chem. Phys., Macromol. Rapid Commun., Macromolecules, Nature, Nature Chemistry, Nature Materials, Nature Nano, Polymer, Polymer Chemistry, RSC Advances, Science, Soft Matter, Synthesis, Synth. Met.,* and others.

### **Reviewer Funding Agencies** (last 5 years)

A. von Humboldt Foundation, Bavarian Ministry of Science and Education, European Research Council, FNR Luxembourg, German Ministry of Science and Education, German Research Foundation, Petroleum Research Funds, Swiss National Science Foundation, U.S. Civilian Research & Development Foundation, US Army Research Office, US Department of Energy, US National Science Foundation, and others.

### **Current Collaborators** (last 5 years)

F. Beyer (US-ARO), M. Borkovec (Geneva), J. Brugger (EPFL), J. Capadona (CWRU), A. Corcuera (Basque U.), A. Eceiza (Basque U.), S. Eichhorn (Exeter), A. Fink (Fribourg), J. Foster (Virginia Tech), K. Fromm (Fribourg), J. Gilman (NIST), E. Gimenez (U. Politecnica de Valencia), T. Kato (Tokyo), A. Kilbinger (Fribourg), M. Lattuada (Fribourg), F. Meinardi (Milan), A. Monguzzi (Milan), T. Nakamura (Hokkaido), H. Otsuka (Tokyo Tech), B. Rothen-Rutishauser (Fribourg), S.J. Rowan (Chicago), R. Rujiravanit (Chulalongkorn U.), Y. Sagara (Hokkaido), D. Schiraldi (CWRU), Y. Simon (USM), K. Singer (CWRU), F. Stellacci (EPFL), A. Studart (ETHZ), A. Takahara (Kyushu), N. Tamaoki (Hokkaido), D. Tyler (CWRU), G. Voirin (CSEM), T. Zimmermann (EMPA), C. Zorman (CWRU)

### **Advisor of Postdoctoral Researchers (34)**

Dr. Justin Zoppe “Nanocellulose“ (2017-present)  
Dr. Carlo Perotto “Smart Adhesives“ (2016-present)  
Dr. Shraddha Chhatre “Smart Adhesives“ (2016-present)  
Dr. Anselmo del Prado Abellán “Smart Adhesives“ (2016-present)  
Dr. Dafni Moatsou “Mechanically Adaptive Nanocomposites“ (2015-present)  
Dr. Stephen Schrettl “Polymer Mechanochemistry” (2015-present)  
Dr. Ester Verde “Polymer Mechanochemistry” (2015-2016), now PolyMat  
Dr. Alexander Hähnel “Polymer Mechanochemistry” (2014-2015), now Freudenberg New Technol.  
Dr. Yoshimitsu Sagara “Polymer Mechanochemistry” (2013-2015), now Asst. Prof. U. Hokkaido  
Dr. Lucas Montero “Supramolecular Polymers” (2013-2014), now Group Leader AMI  
Dr. Burcak Icli “Mechanochemistry in Polymers” (2012-2015), now Schoeller Allibert SA  
Dr. Hua Zou “Mechanically Adaptive Nanocomposites“ (2012-2013)  
Dr. Animesh Saha “Smart Adhesives” (2012-2013), now BASF  
Dr. Katharina Gries “Smart Adhesives” (2012-2014), now Metrohm AG  
Dr. Rebecca Parkhurst “Mechanochemistry in Polymers” (2012-2014), AAAS S&T Policy Fellow  
Dr. Shuo Bai “Mechanically Adaptive Composites“ (2011-2012), now Shenyang National Laboratory  
Dr. Matt Roberts “Adaptive Nanocomposites“ (2011-2013), now Switch Materials Inc. Canada  
Dr. Pratheep Annamalai “BioNanocomposites“ (2010-2012), now Prof. Univ. of Queensland  
Dr. Sandeep Kumar “BioPolymer Nanocomposites“ (2010-2012), now DuPont de Nemours  
Dr. Gina Fiore “Supramolecular Metallopolymers“ (2009-2011), now Nestlé Research  
Dr. Yoan Simon “Stimuli-Responsive Polymers“ (2009-2011), now Prof. USM  
Dr. Johan Foster “Nanocellulose Containing Polymers “ (2009-2011), now Prof. Virginia Tech.  
Dr. Julie Mendez “BioPolymer Nanocomposites“ (2009-2010), now Asst. Prof. IUPUC  
Dr. Markus Geuss “Photonic Crystals “ (2009-2011), now Professor HEFR  
Dr. Lorraine Hsu “Bio-Inspired, Stimuli-Responsive Polymers“ (2009-2010), now PPG  
Dr. Liming Tang “Polymers with Integrated Sensing Capabilities“(2006-2010), now DayGlo Co.  
Dr. O. Van den Berg “Semiconducting Polymer Nanowires” (2006-2007), now Univ. Gent  
Dr. M. Schroeter “Conducting Poly(*p*-phenyleneethynylene)s” (2005-2007), now Teamleader GKSS  
Dr. Jeff Capadona “Bio-Inspired, Stimuli-Responsive Polymers” (2005-2008), now Prof. CWRU  
Dr. Dan Knapton “Organic/Inorganic Hybrid Polymers” (2004-2006), now Lubrizol  
Dr. Param Iyer “Organic/Inorganic Hybrid Polymers” (2003-2004, now Professor IIT  
Dr. Quinghui Chu “Proton-Conducting Membranes” (2002-2004), now U. Akron  
Dr. M. Schroers “Smart Materials with Controllable Stiffness” (2002-2003), now BASF  
Dr. Anja Palmans “Light-Polarizing Polymers” (1999-2000), now Assoc. Prof. TU Eindhoven

### **Host of Visiting Scientists (2)**

Dr. Maki Kinami Toyobo Research Center, Shiga, Japan (2004-2006)  
Dr. C. Löwe EMPA, Dübendorf, Switzerland (2001-2002)

### **Advisor of Ph.D. Students (47)**

Gwendoline Delepierre “Hairy Cellulose Nanocrystals” (2017-present)  
Baptiste Monney “Mechanically Adaptive Polymers“ (2017-present)

Aristotelis Kamtsikakis “Nanocomposite Membranes” (2017-present)  
Felipe Saenz “Optical Upconversion in Nanostructured Polymers” (2016-present)  
Diana Hohl “Polymers for Debonding on Demand Applications” (2016-present)  
Sandra Graterol “Single Component Nanocomposites” (2016-present)  
Julien Sauteaux “Supramolecular Polymers” (2015-present)  
Anne-Cécile Ferahian “Mechanochemistry in Polymers” (2015-present)  
Laura Neumann “Mechanochemistry in Polymers” (2015-present)  
Céline Calvino “Mechanochemistry in Polymers” (2014-present)  
Luis Olachea “Metallosupramolecular Polymers” (2014-present)  
Worarin Meesorn “Mechanically Adaptive Nanomaterials” (2014-present)  
Marc Karman “Mechanochemistry in Polymers” (2014-present)  
Jens Natterodt “Mechanically Adaptive Nanocomposites” (2013-2016), now Dow/Dupont  
Anuja Shirole “Mechanically Adaptive Nanocomposites” (2013-present)  
Apiradee Nicharat “Processing of Cellulose Nanocomposites” (2013-present)  
Anna Lavrenova “Mechanochemistry in Polymers” (2012-2016), Now Evonik  
Mathieu Ayer “Metallosupramolecular Assemblies” (2012-2017)  
David Thevenaz “Mechanochemistry in Polymers” (2012-2016), now Armasuisse  
Janak Sapkota “Processing of Cellulose Nanocomposites” (2012-2016), now M.U. Leoben  
Christian Heinzmann “Supramolecular Adhesives” (2012-2015) now Bachem AG  
Dirk Balkenende “Metallosupramolecular Polymers” (2012-present), now UC Berkeley  
Roberto Vadrucci “Optical Upconversion in Polymers” (2011-2015), now Cambridge University  
Silvana Müller “Cellulose Aerogels” (2011-2014), now Nolato AG  
Sandra Camarero “Anisotropic Cellulose Nanocomposites” (2011-2015), now Prof. U. Queensland  
Tobias Kuhnt “Controlled Release from modified Cellulose Nanofibers” (2011-2015)  
Souleymane Coulibaly “Supramolecular Metallopolymers” (2011-2014)  
Soo-Hyon Lee “Optical Upconversion in Metallopolymers” (2011-2014)  
Mehdi Jorfi “Mechanically Adaptive Nanocomposites” (2011-2014), now MIT  
Mahesh Biyani “Mechanically Adaptive Nanocomposites” (2011-2014), now Halliburton  
Bastien Schyrr “New Polymer Based Sensors” (2010-2014), now TheraNanoptics  
Sonia Kracht “Mechanochemistry in Polymers” (2009-2012), now U. Fribourg  
Kadhir Shanmuganathan “Responsive Polymer Cortical Implants” (2006-2010), now NCL, Pune  
Brian Makowski “Dynamic Photonic Crystals” (2006-2011), now Sherwin Williams  
Joe Lott “Functional Multilayer Polymer Films” (2006-2010), now Prof. U. Southern Miss.  
Mark Burnworth “Metallosupramolecular Polymers” (2005-2011), now Sherwin Williams  
James Mendez “Charge Transport in Conjugated Polymers” (2005-2010), now Prof. IUPIC  
Jill Kunzelman “Polymers with Integrated Sensing Capabilities” (2004-2009), now PolyOne  
Brent Crenshaw “Polymer Chameleons” (2002-2006), now Bayer MaterialScience  
Akshay Kokil “Conjugated Polymer Networks” (2001-2005), now U. Mass. Lowell  
Sven Zimmermann “Orientation of Discotic Liquid Crystals” (U. Marburg 2004), now Novaled  
Christoph Kocher “Anisotropic Functional Polymer Systems” (1999-2003), now Landqart  
Moritz Ehrenstein “Polyamides with Long Alkane Segments” (1999-2003), now BASF

Andrea Montali “Light-Emitting Polymer Displays” (1996-1999), now Synthes  
R. Chandrakanthi “Investigation of Pernigraniline” (1996-1999), now Professor U. Peradeniya  
Daniel Steiger “Poly(*p*-phenylene alkylene)s” (1996-1999), now Ethicon Products

#### **Research Advisor of Master Students (19)**

Sandra Graterol “New Polymer Systems” (2015-2015), now AMI  
Luis Miguel Olachea “Supramolecular Polymers” (2013-2014), now AMI  
Mathieu Ayer “Supramolecular Polymers” (2011-2012), now AMI  
David Thevenaz “Optical Upconversion with Metal-Free Dyes” (2011-2012), now AMI  
Charles Sing “Polymeric Threshold Temperature Sensors“ (2008), now Assistant Prof UIUC  
James Kostka “Light-Emitting Polymers “ (2008-2010), now General Electric Co.  
Claire Rademaker “Synthesis of Conjugated Polymer Networks“ (2005-2006), now US PTO  
Eric Hittinger “Conjugated Polymer Networks” (2002-2003), now US Army SLAA  
Ravi Tangirala “Photo-Patternable Nanomaterials” (2002-2003), now U. Mass. Amherst  
Christian Huber “Conjugated Polymer Networks” (2001), now EMPA  
Katharina Sigg “Optical Sealing of Polymers” (2001)  
Christoph Kocher “Patterning of Functional Polymer Systems” (2000), now Landqart  
Magnus Kristiansen “Proton-Conducting Membranes” (2000), now Ciba Specialty Chemicals  
Michael Eglin “Thermoplastic Processing of Photoluminescent Polarizers” (1999)  
Simon Amhof “Polarizing Energy Transfer in Photoluminescent Polymers” (1998)  
Claude Curti “Poly(*p*-phenylene ethynylene) Light-Emitting Diodes” (1998)  
Florian Dötz “Synthesis of Novel Poly(*p*-phenylene ethynylene)s” (1997)  
Moritz Ehrenstein “Poly(*p*-phenylene alkylene)s - a Class of Forgotten Polymers” (1997)  
Christian Sarwa “Polarized Light Emission from Oriented Polymers” (1997)

#### **Research (~60) and Academic (~30) Advisor of Undergraduate Students**

## External Funding History

### *Past Funding at CWRU*

Various 2001-2009 > \$4'400'000 completed

### *Funding at University of Fribourg*

Get a Grip	Industrial	2010-2013	US\$	180'000	completed
Thermal Transport in Nanocomposites	Industrial	2010-2010	Fr	80'000	completed
Instrumentation Grant	SNF	2010-2010	Fr	200'000	completed
Smart Polymer Nanocomposites NFP62	SNF	2010-2013	Fr	342'000	completed
Better Rapid Prototyping Resins	CTI	2010-2011	Fr	109'000	completed
Cellulose as Bio-scaffold	Industrial	2011-2014	Fr	310'000	completed
Smart Polymer Nanocomposites	Industrial	2011-2013	Fr	280'000	completed
Shape Memory Materials	Industrial	2011-2013	Fr	300'000	completed
Chances and Risks of Nanomaterials NFP64	SNF	2011-2014	Fr	450'000	completed
Organometallic Polymer Systems	SNF	2011-2014	Fr	500'000	completed
Polymer Nanocomposite Processing NFP66	SNF	2012-2016	Fr	400'000	completed
HIProFip	NANO	2012-2014	Fr	121'000	completed
(De)bonding on Demand	CTI	2012-2014	Fr	307'000	completed
Adaptive Adhesive Systems	CTI	2012-2014	Fr	387'000	completed
Supramolecular Polymers	US ARO	2012-2014	\$	180'000	completed
Mechanically Responsive Polymers	ERC	2012-2017	€	2'000'000	completed
Stimuli-Responsive Materials NCCR	SNF	2014-2018	Fr	12'000'000	active <sup>1</sup>
Smart Polymer Nanocomposites NFP62	SNF	2012-2014	Fr	274'000	completed
Chances and Risks of Nanomaterials NFP64	SNF	2014-2015	Fr	200'000	completed
Stimuli-Responsive Metallopolymers	SNF	2014-2017	Fr	550'000	completed
Polymer Nanocomposite Processing NFP66	SNF	2015-2016	Fr	102'000	completed
Smart Polymer Nanocomposites	Industrial	2014-2016	Fr	122'000	completed
Smart Polymer Nanocomposites	CTI	2017-2019	Fr	350'000	active
One-Component Nanocomposites	US ARO	2015-2018	\$	220'000	active
Supramolecular Adhesives Precor	SNF	2015-2018	Fr	350'000	active
Adhesives for Debonding on Demand	ERC-POC	2016-2017	€	150'000	completed
Smart Membranes (PlaMatSu)	ERC-ITN	2017-2020	Fr	229'000	active
Polymers for Light Management	Industrial	2016-2018	Fr	230'000	active
Stimuli-Responsive Supramolecular Polymers	SNF	2017-2021	Fr	1'142'000	active
PIRE Bio-Inspired Materials and Systems	SNF	2017-2022	Fr.	1'544'000	active. <sup>2</sup>

CW served as principal investigator on all grants listed, except for those from the US ARO (PI S. Rowan, co-PI CW), the ITN (PI N. Bruns, Participant CW), and the PIRE (US PI L. Korley, Swiss PI CW).

<sup>1</sup> Fr. 860,000 to Weder group

<sup>2</sup> Additional funding from the US-NSF to the US groups participating in this international partnership program is \$ 5,500,000. Fr. 386,000 to Weder group.