

Rossmann Legacy Session

American Crystallographic Association
Annual Meeting
Cincinnati, Ohio
July 20, 2019

Jack Johnson
The Scripps Research Institute
La Jolla, CA

Michael Rossmann

July 30, 1930 to May 14, 2019

In Memoriam

Professional Accomplishments

- **~200 graduate students and post doctoral students trained**
- **National Academy of Sciences (1984), Fellow of the Royal Society (1996)**
- **Major Awards: Ewald Prize, Grigori Aminoff Prize, Fankuchen Award, Louisa Gross Horwitz Prize, Gairdner Foundation Award, Sackler Prize in Biophysics, the Stein and Moore Award**
- **612 publications (and counting)**
- **six honorary degrees from international universities**

Personal Attributes

- **Energetic, competitive, impatient**
- **Warm, considerate, compassionate**
- **Broad knowledge of history, current affairs, enthusiastic in conversation on many topics**
- **Loved the outdoors, hiking, skiing, sailing (Indiana State champion in his boat class multiple times)**
- **Enjoyed his family immensely. Married to Audrey for 50+ years and she preceded him in death in 2009. Was an enthusiastic assistant for Audrey's artistic endeavors and art fairs**
- **Karen Bogan Soul Mate 2015-2019**

Cambridge 1958-64

STRUCTURE OF HÆMOGLOBIN

A THREE-DIMENSIONAL FOURIER SYNTHESIS AT 5.5-Å. RESOLUTION, OBTAINED
BY X-RAY ANALYSIS

By DR. M. F. PERUTZ, F.R.S., DR. M. G. ROSSMANN, ANN F. CULLIS, HILARY MUIRHEAD
and DR. GEORG WILL

Medical Research Council Unit for Molecular Biology, Cavendish Laboratory, University of Cambridge
AND

DR. A. C. T. NORTH

Medical Research Council External Staff, Davy Faraday Research Laboratory,
Royal Institution, London, W.1

The Detection of Sub-Units Within the Crystallographic Asymmetric Unit

BY MICHAEL G. ROSSMANN AND D. M. BLOW

M. R. C. Unit for Molecular Biology, Cavendish Laboratory, Cambridge, England

(Received 27 February 1961)

The number of structurally identical units within one unit cell often exceeds the number of general positions. The angular relationships between any two units, not related by space-group symmetry, can be found by rotating the Patterson function until the rotated and original Patterson functions are brought into maximum coincidence. For such a rotation, the rotation function

$$R = \sum_{\mathbf{h}} [|F_{\mathbf{h}}|^2 \{ \sum_{\mathbf{p}} |F_{\mathbf{p}}|^2 G \}]$$

has a maximum value. G is an interference function which has large values only when the point \mathbf{p} in reciprocal space is brought close to \mathbf{h} by the rotation.

Application of the R function to horse haemoglobin gives a dominant peak that corresponds accurately to the relative orientation of the α and β chains.

Purdue 1964-2019

Structure of Lactate Dehydrogenase at 2.8 Å Resolution

by

M. J. ADAMS

G. C. FORD

R. KOEKOEK

P. J. LENTZ, jun.

A. McPHERSON, jun.

M. G. ROSSMANN

I. E. SMILEY

R. W. SCHEVITZ

A. J. WONACOTT

Department of Biological Sciences,
Purdue University,
Lafayette, Indiana 47907

Electron density distributions for the M_4 isoenzyme of LDH reveal details of the conformation of the subunit, boundaries between the subunits, and features relevant to the binding of coenzyme and substrate.



MGR Group 1973

Proc. Nat. Acad. Sci. USA

Vol. 70, No. 11, pp. 3052–3054, November 1973

D-Glyceraldehyde-3-Phosphate Dehydrogenase: Three-Dimensional Structure and Evolutionary Significance

(NAD binding/lactate dehydrogenase/x-ray crystallography)

MANFRED BUEHNER*, GEOFFREY C. FORD, DINO MORAS, KENNETH W. OLSEN, AND MICHAEL G. ROSSMANN†

Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907

Communicated by Dr. William N. Lipscomb, July 6, 1973

Rossmann Fold

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Nature Vol. 250 July 19 1974

Chemical and biological evolution of a nucleotide-binding protein

Michael G. Rossmann, Dino Moras & Kenneth W. Olsen

Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907

Viruses

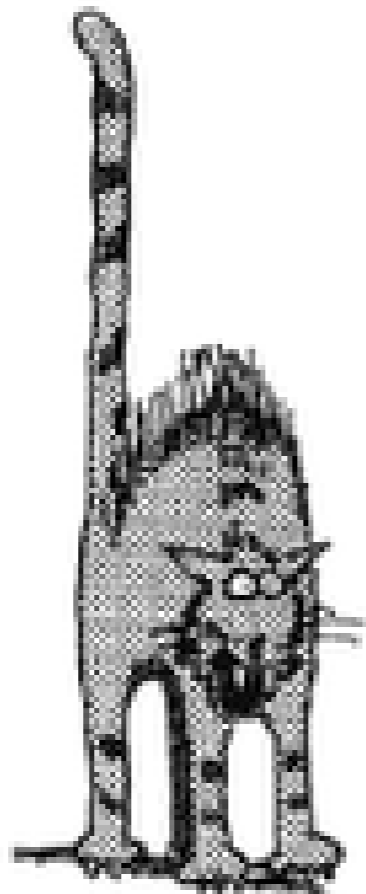
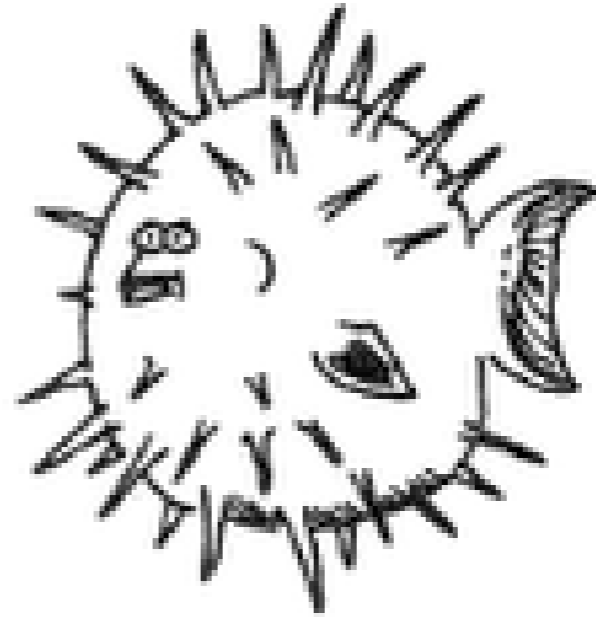
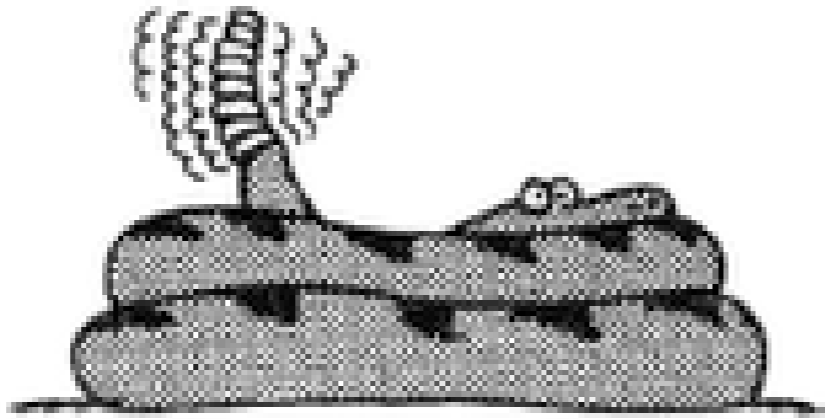
1972-2019

I joined the Rossmann lab in September 1972: SBMV

I had significant adjustments.
No Biology/Biochemistry
No Protein Crystallography
My Ph.D. advisor, Robert
Jacobson, was low key and very
patient. Michael was neither. I had
to develop a strategy for coping
with this.

Danger Signals





Nature's Danger Signals

Town

Rossmann Danger Signals (RDS)



theta

Measure the angle between the shoulders and the neck. Let's call it theta.

$$\text{RDS} = 1/\sin(\text{theta})$$

As theta approaches zero and RDS approaches infinity get out ASAP

Structure of southern bean mosaic virus at 2.8 Å resolution

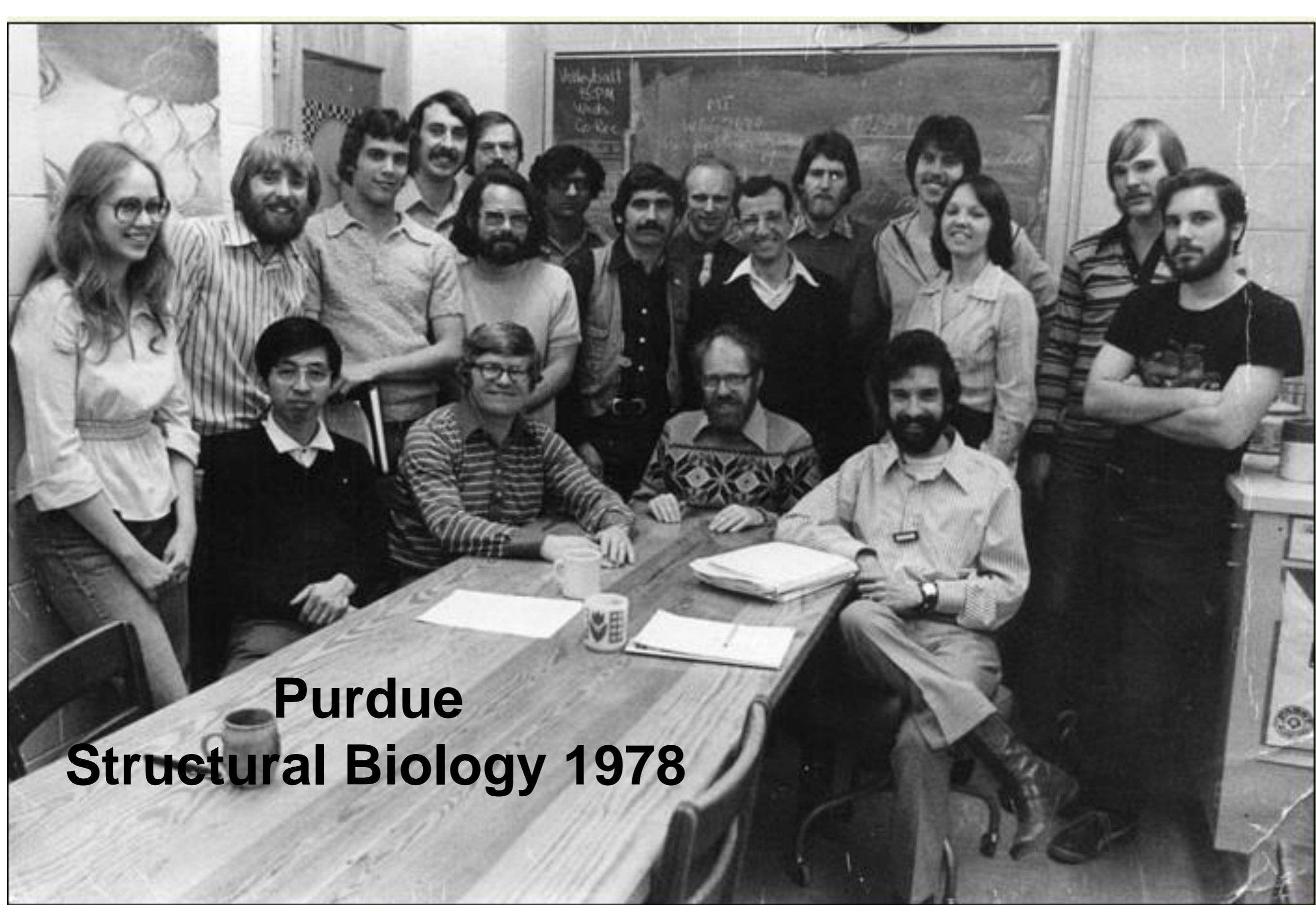
**Celerino Abad-Zapatero, Sherin S. Abdel-Meguid, John E. Johnson,
Andrew G. W. Leslie^{*}, Ivan Rayment[†], Michael G. Rossmann,
Dietrich Suck[‡] & Tomitake Tsukihara[§]**

Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907

A few remembrances

1. The shattered light box and the quick reconstruction of same.
2. The wrong lattice constants discovered by Tomitake Tsukihara.
3. SBMV is TBSV
4. The crash helmet required in the Richard's box to prevent head injuries.





**Purdue
Structural Biology 1978**

Thank you Michael

There is widespread respect from those that worked with Michael or knew him well and gratitude for how he shaped our professional and personal lives.

Rest in Peace