

Welche Voraussetzungen benötigt Spitzenforschung und
woran kann man ihre Ergebnisse messen?



Institut des Hautes Études Scientifiques,
Bures sur Yvettes, France
Gründung 1958



Santa Fe Institute,
Santa Fe, NM, USA
Gründung 1984



Advanced Study Institute,
Princeton, NJ, USA
Gründung 1930



European Media Laboratory Research,
Heidelberg, Deutschland
Gründung 2003



Perimeter Institute,
Waterloo, Ontario, Canada
Gründung 1999

Wie soll man wissenschaftlich arbeiten? /

Hinweise von Otto Warburg

Auch seine eigenen Erfahrungen darüber, wie wissenschaftliche Arbeit zu organisieren sei und wie die Bedingungen dafür sein müßten, um erfolgreich zu sein, wollte er weitergeben. Vorbildhaft erschien ihm sein eigenes Institut als Ein-Mann-Forschungsbetrieb. Was die zu fördernden Fachgebiete anging, so blieb er traditionellen Vorstellungen verhaftet. Bemerkenswert auch seine Anmerkungen zur Lehrtätigkeit:

Dokument Nr. 156

Otto Warburg an Friedrich Rau

Berlin, den 19. 11. 1962

Sehr verehrter Herr Senatsdirector!

Wenn man wünscht, Berlin wieder zu einer Stätte naturwissenschaftlicher Forschung zu entwickeln, möchte ich vorschlagen, vier kleine Forschungsinstitute zu errichten, etwa für die Gebiete der Physikalischen Chemie, der Chemie, der Biologie und der Medizin. Die Leiter der Institute sollten bei ihrer Berufung nicht älter als 35 Jahre sein. Ihr Hilfspersonal sollte aus nicht mehr als zwei Assisten-

ten, zwei Laboranten und zwei Mechanikern bestehen. Der Personaletat eines jeden Instituts sollte etwa 100000,- Mark pro Jahr betragen, und von gleicher Höhe sollte der Sachetat sein. 4 einstöckige Gebäude, z. B. in Barackenform, von je 200 qm Grundfläche, kreuzförmig um einen kleinen zentralen Verwaltungs- und Bibliotheksraum angeordnet, würde ich für zweckmässig halten.

Die Erfahrung hat gelehrt, dass grundlegende wissenschaftliche Entdeckungen auf dem Gebiet der Naturwissenschaften nicht von Directoren grosser Institute gemacht werden, deren Zeit für Verwaltungsarbeit, Reisen und Repräsentation verbraucht wird, sondern von denjenigen, die ihre ganze Zeit ihren Forschungsarbeiten, im wesentlichen der Arbeit ihrer Hände, widmen können; während diejenigen, die aufhören, selbst zu experimentieren, zur Sterilität verurteilt sind. Ich möchte raten, die Leiter der Institute zunächst nur auf fünf Jahre und auch dann noch nicht auf Lebenszeit einzustellen. Ich möchte ferner raten, die Leiter der Institute nicht zu ermutigen, neben ihren Forschungsstellen noch Universitätsstellen anzunehmen, da sie zur Forschung, nicht zum Unterricht berufen worden sind. Später, wenn sie in ihrer Forschung erfolgreich gewesen sind, ergibt sich ein Unterricht in der Forschung von selbst durch die wissenschaftlichen Gäste, die ein erfolgreiches Institut immer aufsuchen werden.

Ich weiss, dass nur wenige bereit sind, auf die Dauer vor morgens bis abends in einem Laboratorium zu arbeiten. Andererseits gibt es keinen andern Weg zum Erfolg. Auch ist der freiwillige Verzicht auf die breitere, abwechslungsreichere und dankbarere Tätigkeit an einer Universität der beste Test auf Eignung zum Forscher.

Mit ergebenen Grüssen

Otto Warburg

Petra Werner, Ed. *Ein Genie irrt seltener ... Otto Heinrich Warburg. Ein Lebensbild in Dokumenten.* Akademie Verlag, Berlin 1991, pp.409,410.



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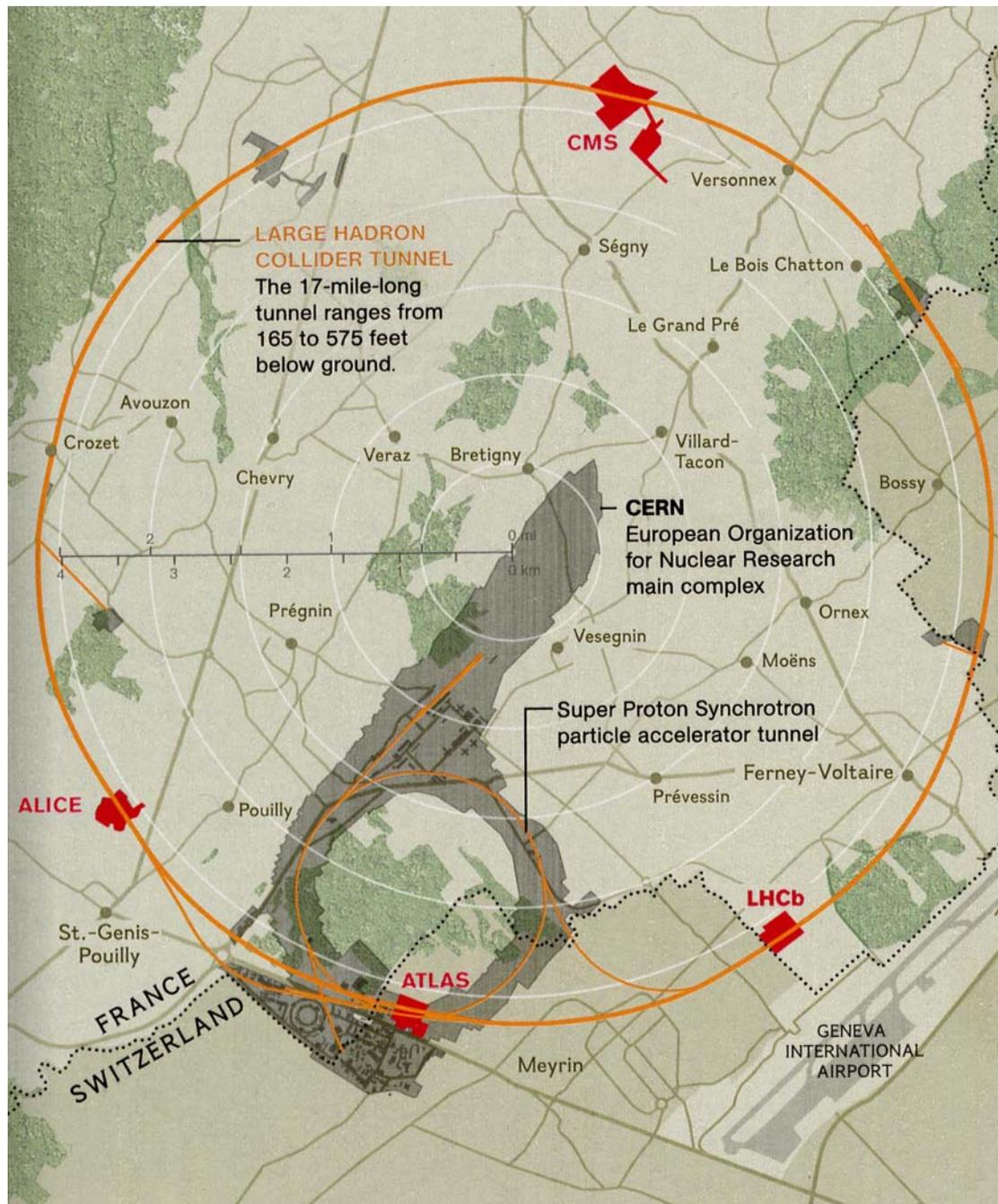
Will analyze the collisions of lead nuclei to study quark-gluon plasma, a state of matter that existed immediately after the big bang



LHCb

May help scientists understand why the big bang yielded a universe with more matter than antimatter

SOURCE: CERN
SEAN MCNAUGHTON, NGM



First Measurement of the Rate for the Inclusive Radiative Penguin Decay $b \rightarrow s\gamma$

M. S. Alam,¹ I. J. Kim,¹ Z. Ling,¹ A. H. Mahmood,¹ J. J. O'Neill,¹ H. Severini,¹ C. R. Sun,¹ F. Wappler,¹ G. Crawford,² C. M. Daubenmier,² R. Fulton,² D. Fujino,² K. K. Gan,² K. Honscheid,² H. Kagan,² R. Kass,² J. Lee,² M. Sung,² C. White,² A. Wolf,² M. M. Zoeller,² F. Butler,³ X. Fu,³ B. Nemat,³ W. R. Ross,³ P. Skubic,³ M. Wood,³ M. Bishai,⁴ J. Fast,⁴ E. Gerndt,⁴ J. W. Hinson,⁴ R. L. McIlwain,⁴ T. Miao,⁴ D. H. Miller,⁴ M. Modesitt,⁴ D. Payne,⁴ E. I. Shibata,⁴ I. P. J. Shipsey,⁴ P. N. Wang,⁴ M. Battle,⁵ J. Ernst,⁵ L. Gibbons,⁵ Y. Kwon,⁵ S. Roberts,⁵ E. H. Thorndike,⁵ C. H. Wang,⁵ T. Coan,⁶ J. Dominick,⁶ V. Fadeyev,⁶ I. Korolkov,⁶ M. Lambrecht,⁶ S. Sanghera,⁶ V. Shelkov,⁶ T. Skwarnicki,⁶ R. Stroynowski,⁶ I. Volobouev,⁶ G. Wei,⁶ M. Artuso,⁷ M. Gao,⁷ M. Goldberg,⁷ D. He,⁷ N. Horwitz,⁷ G. C. Moneti,⁷ R. Mountain,⁷ F. Muheim,⁷ Y. Mukhin,⁷ S. Playfer,⁷ Y. Rozen,⁷ S. Stone,⁷ X. Xing,⁷ G. Zhu,⁷ J. Bartelt,⁸ S. E. Csorna,⁸ Z. Egyed,⁸ V. Jain,⁸ D. Gibaut,⁹ K. Kinoshita,⁹ P. Pomianowski,⁹ B. Barish,¹⁰ M. Chadha,¹⁰ S. Chan,¹⁰ D. F. Cowen,¹⁰ G. Eigen,¹⁰ J. S. Miller,¹⁰ C. O'Grady,¹⁰ J. Urheim,¹⁰ A. J. Weinstein,¹⁰ M. Athanas,¹¹ W. Brower,¹¹ G. Masek,¹¹ H. P. Paar,¹¹ J. Gronberg,¹² C. M. Korte,¹² R. Kutschke,¹² S. Menary,¹² R. J. Morrison,¹² S. Nakanishi,¹² H. N. Nelson,¹² T. K. Nelson,¹² C. Qiao,¹² J. D. Richman,¹² A. Ryd,¹² D. Sperka,¹² H. Tajima,¹² M. S. Witherell,¹² R. Balest,¹³ K. Cho,¹³ W. T. Ford,¹³ D. R. Johnson,¹³ K. Lingel,¹³ M. Lohner,¹³ P. Rankin,¹³ J. G. Smith,¹³ J. P. Alexander,¹⁴ C. Bebek,¹⁴ K. Berkelman,¹⁴ K. Bloom,¹⁴ T. E. Browder,^{14,*} D. G. Cassel,¹⁴ H. A. Cho,¹⁴ D. M. Coffman,¹⁴ D. S. Crowcroft,¹⁴ P. S. Drell,¹⁴ D. J. Dumas,¹⁴ R. Ehrlich,¹⁴ P. Gaidarev,¹⁴ M. Garcia-Sciveres,¹⁴ B. Geiser,¹⁴ B. Gittelman,¹⁴ S. W. Gray,¹⁴ D. L. Hartill,¹⁴ B. K. Heltsley,¹⁴ S. Henderson,¹⁴ C. D. Jones,¹⁴ S. L. Jones,¹⁴ J. Kandaswamy,¹⁴ N. Katayama,¹⁴ P. C. Kim,¹⁴ D. L. Kreinick,¹⁴ G. S. Ludwig,¹⁴ J. Masui,¹⁴ J. Mevissen,¹⁴ N. B. Mistry,¹⁴ C. R. Ng,¹⁴ E. Nordberg,¹⁴ J. R. Patterson,¹⁴ D. Peterson,¹⁴ D. Riley,¹⁴ S. Salzman,¹⁴ M. Sapper,¹⁴ F. Würthwein,¹⁴ P. Avery,¹⁵ A. Freyberger,¹⁵ J. Rodriguez,¹⁵ S. Yang,¹⁵ J. Yelton,¹⁵ D. Cinabro,¹⁶ T. Liu,¹⁶ M. Saulnier,¹⁶ R. Wilson,¹⁶ H. Yamamoto,¹⁶ T. Bergfeld,¹⁷ B. I. Eisenstein,¹⁷ G. Gollin,¹⁷ B. Ong,¹⁷ M. Palmer,¹⁷ M. Selen,¹⁷ J. J. Thaler,¹⁷ K. W. Edwards,¹⁸ M. Ogg,¹⁸ A. Bellerive,¹⁹ D. I. Britton,¹⁸ E. R. F. Hyatt,¹⁹ D. B. MacFarlane,¹⁹ P. M. Patel,¹⁹ B. Spaan,¹⁹ A. J. Sadoff,²⁰ R. Ammar,²¹ P. Baringer,²¹ A. Bean,²¹ D. Besson,²¹ D. Coppage,²¹ N. Copty,²¹ R. Davis,²¹ N. Hancock,²¹ M. Kelly,²¹ S. Kotov,²¹ I. Kravchenko,²¹ N. Kwak,²¹ H. Lam,²¹ Y. Kubota,²² M. Lattery,²² M. Momayezi,²² J. K. Nelson,²² S. Patton,²² R. Poling,²² V. Savinov,²² S. Schrenk,²² and R. Wang²²

(CLEO Collaboration)

¹State University of New York at Albany, Albany, New York 12222

²Ohio State University, Columbus, Ohio, 43210

³University of Oklahoma, Norman, Oklahoma 73019

⁴Purdue University, West Lafayette, Indiana 47907

⁵University of Rochester, Rochester, New York 14627

⁶Southern Methodist University, Dallas, Texas 75275

⁷Syracuse University, Syracuse, New York 13244

⁸Vanderbilt University, Nashville, Tennessee 37235

⁹Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061

¹⁰California Institute of Technology, Pasadena, California 91125

¹¹University of California, San Diego, La Jolla, California 92093

¹²University of California, Santa Barbara, California 93106

¹³University of Colorado, Boulder, Colorado 80309-0390

¹⁴Cornell University, Ithaca, New York 14853

¹⁵University of Florida, Gainesville, Florida 32611

¹⁶Harvard University, Cambridge, Massachusetts 02138

¹⁷University of Illinois, Champaign-Urbana, Illinois 61801

¹⁸Carleton University, Ottawa, Ontario, Canada K1S 5B6

and the Institute of Particle Physics, Montreal, Canada H3A 2T8

¹⁹McGill University, Montréal, Québec, Canada H3A 2T8

and the Institute of Particle Physics, Montreal, Canada H3A 2T8

²⁰Ithaca College, Ithaca, New York 14850

²¹University of Kansas, Lawrence, Kansas 66045

²²University of Minnesota, Minneapolis, Minnesota 55455

199 Autoren aus
22 Institutionen



EMBL Hinxton
Genomik, Bioinformatik
Datenbanken



EMBL Hamburg
Stukturbiologie am DESY



EMBL Heidelberg
„Stammhaus“, 800 Mitarbeiter

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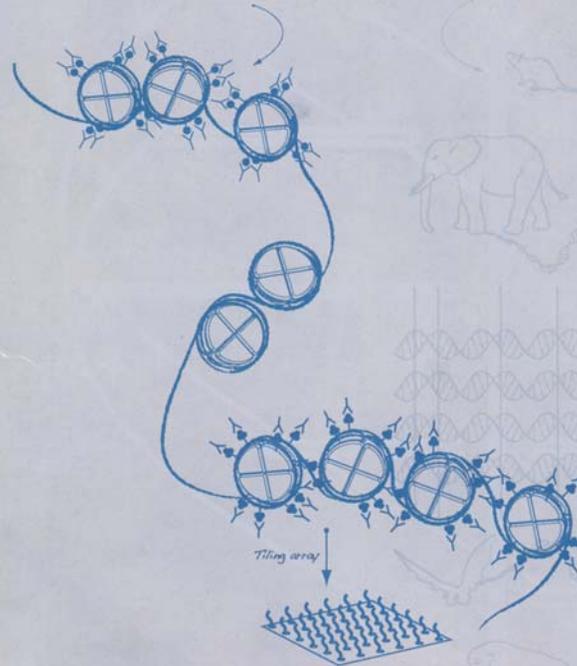


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Supplementary Information is linked to the online version of the paper at www.nature.com/nature.

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Author Information Reprints and permissions information is available at www.nature.com/reprints. The authors declare no competing financial interests. The list of individual authors is divided among the six main analysis groups and five organizational groups. Correspondence and requests for materials should be addressed to the co-chairs of the ENCODE analysis groups (listed in the Analysis Coordination group): E. Birney (Birney@ebi.ac.uk), J. A. Stamatoyannopoulos (jstam@u.washington.edu), A. Dutta (ad3@virginia.edu), R. Guigó (rguigo@imics.csic.es), R. T. Gingeras (Tom.Gingeras@affymetrix.com), E. H. Margulies (eliott@nigr.nih.gov), Z. Weng (zhiping@biu.edu), M. Snyder (michaelsnyder@yale.edu), E. T. Dermitzakis (md4@sanger.ac.uk) or collectively (encode_chairs@ebi.ac.uk).

The ENCODE Project Consortium

Analysis Coordination Ewan Birney¹, John A. Stamatoyannopoulos⁵, Anindya Dutta³, Rodrigo Guigó¹⁰, Thomas R. Gingeras⁶, Elliott H. Margulies⁷, Zhiping Weng^{8,9}, Michael Snyder^{10,11} & Emmanouil T. Dermitzakis¹²

Chromatin and Replication John A. Stamatoyannopoulos⁵, Robert E. Thurman^{2,13}, Michael S. Kuehn¹³, Christopher M. Taylor³, Shane Neph¹³, Christoph M. Koch¹², Saurabh Asthana¹³, Ankit Malhotra¹³, Ivan Adzhubei¹³, Jason A. Greenbaum¹³, Robert M. Andrews¹³, Paul Flicek¹³, Patrick J. Boyle¹³, Hua Cao¹³, Nigel P. Carter¹³, Gayle K. Cline¹³, Sean Davis¹³, Nathan Dey¹³, Pawandeep Dham¹³, Shana C. Dillon¹³, Michael O. Dorschner¹³, Helke Fiegler¹³, Paul G. Giresi¹³, Jeff Goldy¹³, Michael Hawrylycz¹³, Andrew Haydock¹³, Richard Humbert¹³, Keith D. James¹³, Brett E. Johnson¹³, Ericka Lee¹³, Johnson¹³, Tristan T. Frum¹³, Elizabeth R. Rosenzweig¹³, Neerja Karamni¹³, Kristin Lee¹³, Gregory C. LeFebvre¹³, Patrick A. Navas¹³, Fidencio Neri¹³, Stephen C. Parker¹³, Peter J. Sabo¹³, Richard Sandstrom¹³, Anthony Shafer¹³, David Vetrie¹³, Molly Weaver¹³, Sarah

Wilcox¹³, Man Yu¹³, Francis S. Collins¹³, Job Dekker¹³, Jason D. Lieb¹³, Thomas D. Tullius¹³, Gregory E. Crawford¹³, Shamil Sunayev¹³, William S. Noble¹³, Ian Dunham¹² & Anindya Dutta³

Genes and Transcripts Roderic Guigó^{4,5}, France Denoeud⁴, Alexandre Reymond^{1,2,3}, Philipp Kapranov⁴, Joel Rozowsky⁴, Deyou Zheng⁴, Robert Castelo⁴, Adam Frankish⁴, Jennifer Harrow⁴, Srinika Ghosh⁴, Albin Stribosch⁴, Ivo L. Hofacker⁴, Robert Baertsch^{4,25}, Damian Keefe⁴, Paul Flicek⁴, Suijit Diké⁴, Jill Cheng⁴, Heather A. Hirsch²⁷, Edward A. Sekinger²⁷, Julien Lagarde⁴, Joseph F. Abiri^{28,29}, Atif Shahab²⁷, Christoph Flamm^{4,30}, Claudia Fried³⁰, Jörg Hackermüller³⁰, Jania Hertel³⁰, Manja Lindemeyer³⁰, Kristin Missa^{30,31}, Andrea Tanzer^{4,30}, Stefan Washietl^{4,31}, Jan Korbel¹, Olaf Emanuelsson¹, Jakob S. Pedersen³², Nancy Holroyd^{1,2}, Ruth Taylor^{1,2}, David Swarbrick^{1,2}, Nicholas Matthews^{1,2}, Mark C. Dickson^{1,2}, Daryl J. Thomas^{2,36}, Matthew T. Weirauch^{2,3}, James Gilbert^{1,3}, Jörg Drenkow^{1,3}, Ian Bell¹, Xiaodong Zhao^{1,3}, K. Srinivasan³⁴, Wing-Kin Sung³⁴, Hong San Ooi³⁴, Luo Ping Chiu³⁴, Sylvain Foissac³⁴, Trivis Alotto¹, Michael Brent³⁵, Lior Pachter³⁵, Michael L. Tress³¹, Alfonso Valencia³², Siow Wook Choo³⁴, Chiou Yu Choo³⁴, Catherine Ucla³², Caroline Manzano³², Carine Wynn³², Evelyn Cheng³², Taane G. Clark³², James B. Brown³², Madhavan Ganesh³², Sandeep Patel³², Hari Tammana³², Jacqueline Chrast³², Charlotte N. Henrichsen³², Chikatoshi Kari³², Jun Kawa^{32,46}, Ugursoy Nagalakshmi³², Jiaqian Wu³², Zheng Lian³¹, Jin Lian³¹, Peter Neuburger³², Xueqing Zhang³², Peter Bickel³², John S. Mottick⁴⁴, Piero Carninci³², Yoshhide Hayashizaki^{32,44}, Sherman Weissman³², Emmanouil T. Dermitzakis³², Elliott H. Margulies³², Tim Hubbard³², Richard M. Myers³², Jane Rogers³², Peter F. Stadler^{24,35,45}, Todd M. Lowe³², Chia-Lin Wei³⁴, Yijun Ruan³⁴, Michael Snyder^{10,11}, Ewan Birney¹, Kevin Struhl³⁷, Mark Gerstein^{11,46,47}, Stylianos E. Antonarakis³ & Thomas R. Gingeras⁶

Integrated Analysis and Manuscript Preparation James B. Brown³², Paul Flicek⁴, Yutao Fu³, Damian Keefe⁴, Ewan Birney¹, France Denoeud⁴, Mark Gerstein^{11,46,47}, Eric D. Green⁴⁸, Philipp Kapranov⁴, Ulaz Karab⁴, Richard M. Myers³², William S. Noble¹³, Alexandre Reymond^{1,2,3}, Joel Rozowsky⁴, Kevin Struhl³⁷, Adam Siepel^{25,26,4}, John A. Stamatoyannopoulos⁵, Christopher M. Taylor³, James Taylor^{49,50}, Robert E. Thurman¹³, Thomas D. Tullius¹³, Stefan Washietl^{4,31} & Deyou Zheng¹¹

Management Group Laura A. Liefer⁵¹, Kris A. Wetterstrand⁵¹, Peter J. Good⁵¹, Elise A. Feingold⁵¹, Mark S. Guyer⁵¹ & Francis S. Collins⁵²

Multi-species Sequence Analysis Elliott H. Margulies⁷, Gregory M. Cooper^{23,4}, George Asiminos⁵³, Daryl J. Thomas^{25,26}, Colin N. Dewey⁵⁴, Adam Siepel^{25,26,4}, Ewan Birney¹, Damian Keefe⁴, Minmei Hou^{49,50}, James Taylor^{49,50}, Sergey Nikolae²⁵, Juan I. Montoya-Burgos⁵⁵, Ari Lötynytö⁵⁶, Simon Whelan¹, Fabio Parodi¹, Tim Missingham¹, James B. Brown³², Haiyan Huang³², Nancy R. Zhang³², Peter Bickel³², Ian Holmes³², James C. Mullikin⁴⁸, Abel Ureta-Vidal¹, Benedict Paten¹, Michael Springhaus¹, Daanna Church¹, Kate Rosenbloom³⁷, W. James Kent^{37,26}, Eric A. Stone³⁷, NISC Comparative Sequencing Program³, Baylor College of Medicine Human Genome Sequencing Center³, Washington University Genome Sequencing Center³, Broad Institute³, Children's Hospital Oakland Research Institute³, Mark Gerstein^{11,46,47,57}, Stylianos E. Antonarakis³, Serafim Batzoglou³⁵, Nick Goldman³⁸, Ross C. Hardison^{39,58}, David Haussler^{35,26,60}, Webb Miller^{49,50,61}, Lior Pachter³⁶, Eric D. Green⁴⁸ & Arend Sidow^{3,62}

Transcriptional Regulatory Elements Zhiping Weng^{8,9}, Nathan D. Trinklein¹³, Yutao Fu³, Zhendong D. Zhang¹, Ulaz Karab⁴, Leah Barreca⁴⁸, Rhona Stuart⁵⁰, Deyou Zheng¹¹, Srinika Ghosh⁴, Paul Flicek⁴, David C. King^{50,59}, James Taylor^{49,50}, Adam Ameer⁶³, Stefan Enroth⁶⁰, Mark C. Bieda¹⁰, Christoph M. Koch¹², Heather A. Hirsch²⁷, Chia-Lin Wei³⁴, Jill Cheng⁴, Jonghwan Kim¹, Akshay A. Bhinge¹, Paul G. Giresi¹³, Nan Jiang¹, Jun Liu¹, Fei Yao¹, Wing-Kin Sung³⁴, Kuo Ping Chiu³⁴, Vimsensiu B. Vega³⁴, Charlie W. H. Lee³⁴, Patrick Ng³⁴, Atif Shahab²⁷, Edward A. Sekinger²⁷, Anne Yang²⁷, Zarnik Mostafadei²⁷, Zhou Zhu²⁷, Xiaodong Xu²⁷, Sharon Squazzo²⁷, Matthew J. Oberley²⁷, David Inman²⁷, Michael A. Singer²⁷, Todd A. Richmond²⁷, Kyle J. Mum^{27,74}, Alvaro Rada-Iglesias⁷⁴, Ola Wallerham⁷⁴, Jan Komorowski⁷⁵, Gayle K. Cline¹³, Daniel Sarah Wilcox¹³, Shana C. Dillon¹³, Robert M. Andrews¹³, Joanna C. Fowler¹³, Philippe Coutts¹², Keith D. James¹³, Gregory C. LeFebvre¹³, Alexander W. Bruce¹³, Oliver M. Dovey¹³, Peter D. Ellis¹³, Pawandeep Dham¹³, Cordelia F. Langford¹³, Nigel P. Carter¹², David Vetrie¹³, Philipp Kapranov⁴, David A. Nix¹, Ian Bell¹, Sandeep Patel³², Joel Rozowsky⁴, Gita Euskirchen⁴, Stephen Hartman⁴⁰, Jin Lian³¹, Jiaqian Wu³², Alexander E. Urban³¹, Peter Kraus¹⁰, Sara Van Calcar⁶⁴, Nate Heintzman⁶⁸, Tae Hoon Kim⁶⁸, Kun Wang⁶⁸, Chunxu Qu⁶⁸, Gary Hon⁶⁸, Rosa Luna⁶⁸, Christopher K. Glass⁶⁸, M. Geoff Rosenfeld⁶⁸, Shelley Force Aldred⁶⁸, Sara J. Cooper¹, Anson Hales⁶⁸, Jane M. Lin⁶⁸, Heryland P. Shulha⁶⁸, Xiaodong Zhang⁶⁸, Mousheng Xu⁶⁸, Jaafar N. S. Haidar⁶⁸, Yong Yu⁶⁸, Ewan Birney¹, Sherman Weissman³², Yijun Ruan³⁴, Jason D. Lieb¹³, Vishwanath R. Iyer¹¹, Ronald D. Green¹², Thomas R. Gingeras⁶, Claes Wadelius¹⁴, Ian Dunham¹², Kevin Struhl³⁷, Ross C. Hardison^{39,59}, Mark Gerstein^{11,46,47}, Peggy J. Farnham⁷⁰, Richard M. Myers³⁷, Bing Ren⁶⁸ & Michael Snyder^{10,11}

UCSC Genome Browser Daryl J. Thomas^{2,36}, Kate Rosenbloom²⁶, Rachel A. Harte²⁶, Angie S. Hinrichs²⁶, Heather Trumbower²⁶, Hiram Clawson²⁶, Jennifer Hillman-Jackson²⁶, Ann S. Zweig²⁶, Kayla Smith²⁶, Archana Thakkapallayil²⁶, Galt Barber²⁶, Robert M. Kuhn²⁶, Donna Karolchik²⁶, David Haussler^{25,26,60} & W. James Kent^{25,26}

Variation Emmanouil T. Dermitzakis¹², Luis Armengol¹⁶, Christine P. Bird¹², Taane G. Clark¹⁶, Gregory M. Cooper^{23,4}, Paul I. W. de Bakker¹², Andrew D. Kern¹⁶, Nuria Lopez-Bigas¹⁶, Joel D. Martin^{16,19}, Barbara E. Stranger¹², Daryl J. Thomas^{2,36}, Abigail Woodruff¹⁶, Serafim Batzoglou¹⁹, Eugene D. Strydom¹⁹, Antongne Dimas¹⁹, Eduardo Eyras¹⁹, Ingrid B. Hallgrimsdóttir¹⁹, Ross C. Hardison^{39,59}, Michael C. Zody¹⁷, Arend Sidow^{3,62}, James Taylor^{49,50}, Heather Trumbower²⁶, Julian Chaffin¹⁷, Roderic Guigó^{4,5}, James C. Mullikin⁴⁸, Gonçalo R. Abecasis¹⁷, Xavier Estivill^{76,60} & Ewan Birney¹

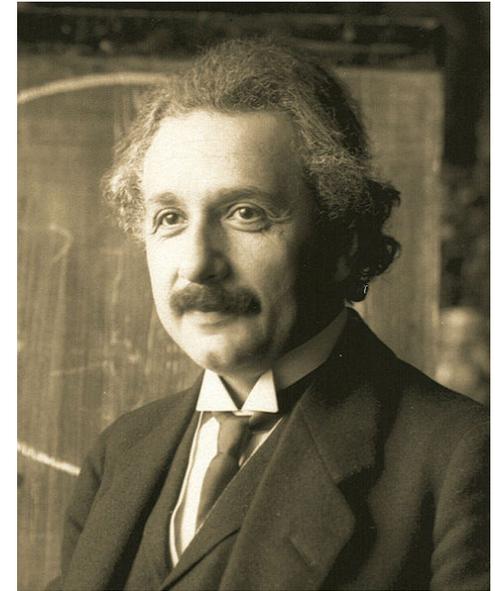
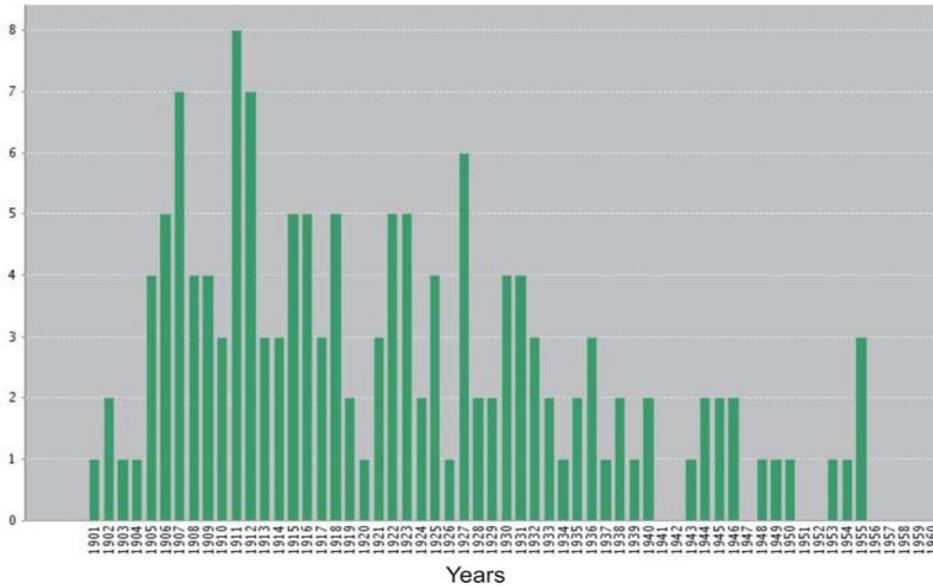
'NISC Comparative Sequencing Program Gerard G. Bouffard⁷, Xiaobin Guan⁴⁸, Nancy F. Hansen⁴⁸, Jacquelyn R. Idol¹, Valerie V. Maduro¹, Baishali Maskeri⁴⁸, Jennifer C. McDowell¹⁸, Morgan Park¹⁸, Pamela J. Thomas¹⁸, Alice C. Young¹⁸ & Robert W. Blakesley^{7,45} **Baylor College of Medicine, Human Genome Sequencing Center** Donna M. Muzny^{7,45}, Erica Sodergren¹⁹, David A. Wheeler⁴⁵, Kim C. Worley⁴⁵, Huiyuan Jiang⁴⁵, George M. Weinstock⁴⁵ & Richard A. Gibbs⁷ **Washington University Genome Sequencing Center** Tina Graves³, Robert Fulton³, Elaine R. Mardis³ & Richard K. Wilson³ **Broad Institute** Michele Clamp³, James Cuff⁶⁵, Sante Gargis⁶⁵, David B. Jaffe⁶⁵, Jean L. Chang⁶⁵, Kerstin Lindblad-Toh⁶⁵ & Eric S. Lander⁶⁵ **Children's Hospital Oakland Research Institute** Maxim Kobayashi³⁷, Mikhail Nefedov³⁷, Kazutoshi Osoegawa³⁷, Yuku Yoshinaga³⁷, Baoji Zhu³⁷ & Pieter J. de Jong³⁷

Affiliations for participants: ¹EMBL-European Bioinformatics Institute, Wellcome Trust Genome Campus, Hinxton, Cambridge, CB10 1SD, UK. ²Department of Genome Sciences, 1705 NE Pacific Street, Box 357730, University of Washington, Seattle, Washington 98195, USA. ³Department of Biochemistry and Molecular Genetics, Jordan 1240, Box 800733, 1300 Jefferson Park Ave, University of Virginia School of Medicine, Charlottesville, Virginia 22908, USA. ⁴Genomic Bioinformatics Program, Center for Genomic Regulation, ⁵Research Group in Biomedical Informatics, Institut Municipal d'Investigació Mèdica/Universitat Pompeu Fabra, c/o Dr. Aiguader 88, Barcelona, Biomedical Research Park Building, 08003 Barcelona, Catalonia, Spain. ⁶Affymetrix, Inc., Santa Clara, California 95051, USA. ⁷Genome Technology Branch, National Human Genome Research Institute, National Institutes of Health, Bethesda, Maryland 20892, USA. ⁸Bioinformatics Program, Boston University, 24 Cummington St., Boston, Massachusetts 02215, USA. ⁹Biomedical Engineering Department, Boston University, 44 Cummington St., Boston, Massachusetts 02215, USA. ¹⁰Department of Molecular, Cellular, and Developmental Biology, Yale University, New Haven, Connecticut 06520, USA. ¹¹Department of Molecular Biophysics and Biochemistry, Yale University, PO Box 208114, New Haven, Connecticut 06520, USA. ¹²The Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus, Hinxton, Cambridge, CB10 1SD, UK. ¹³Division of Medical Genetics, 1705 NE Pacific Street, Box 357720, University of Washington, Seattle, Washington 98195, USA. ¹⁴Division of Genetics, Brigham and Women's Hospital and Harvard Medical School, 77 Avenue Louis Pasteur, Boston, Massachusetts 02115, USA. ¹⁵Department of Chemistry and Program in Bioinformatics, Boston University, 590 Commonwealth Avenue, Boston, Massachusetts 02215, USA. ¹⁶Genetics Branch, Center for Cancer Research, National Cancer Institute, National Institutes of Health, Bethesda, Maryland 20892, USA. ¹⁷Department of Biology and Carolina Center for Genome Sciences, CB4 3280, 202 Fordham Hall, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599, USA. ¹⁸Allien Institute for Brain Sciences, 551 North 34th Street, Seattle, Washington 98103, USA. ¹⁹Program in Gene Function and Expression and Department of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, 364 Plantation Street, Worcester, Massachusetts 01605, USA. ²⁰Institute for Genome Sciences & Policy and Department of Pediatrics, 101 Science Drive, Duke University, Durham, North Carolina 27708, USA. ²¹Center for Integrative Genomics, University of Lausanne, Genopode building, 1015 Lausanne, Switzerland. ²²Department of Genetic Medicine and Development, University of Geneva Medical School, 1211 Geneva, Switzerland. ²³Genome Exploration Research Group, RIKEN Genomic Sciences Center (GSC), RIKEN Yokohama Institute, 1-7-22, Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa, 230-0045, Japan. ²⁴Institute for Theoretical Chemistry, University of Vienna, Währingerstraße 17, A-1090 Wien, Austria. ²⁵Department of Biomedical Engineering, University of California, Santa Cruz, 1156 High Street, Santa Cruz, California 95064, USA. ²⁶Center for Biomedical Science and Engineering, Engineering 2, Suite 501, Mail Stop CBSE/ITI, University of California, Santa Cruz, California 95064, USA. ²⁷Department of Biological Chemistry & Molecular Pharmacology, Harvard Medical School, 240 Longwood Avenue, Boston, Massachusetts 02115, USA. ²⁸Department of Genetics, Facultat de Biologia, Universitat de Barcelona, Av Diagonal, 645, 08028, Barcelona, Catalonia, Spain. ²⁹Bioinformatics Institute, 30 Biopolis Street, #07-011 Matrix, Singapore, 138673, Singapore. ³⁰Bioinformatics Group, Department of Computer Science, ³¹Interdisciplinary Institute for Biomedical Informatics, University of Leipzig, Härtelstraße 16-18, D-04107 Leipzig, Germany. ³²Fraunhofer Institut für Zelltherapie und Immunologie - IZT, Deutscher Platz 5e, D-04103 Leipzig, Germany. ³³Department of Genetics, Stanford University School of Medicine, Stanford

California 94305, USA. ³⁴Genome Institute of Singapore, 60 Biopolis Street, Singapore 138672, Singapore. ³⁵Laboratory for Computational Genomics, Washington University, Campus Box 1045, Saint Louis, Missouri 63130, USA. ³⁶Department of Mathematics and Computer Science, University of California, Berkeley, California 94720, USA. ³⁷Spanish National Cancer Research Center, CNIO, Madrid, E-28029, Spain. ³⁸Department of Epidemiology and Public Health, Imperial College, St Mary's Campus, Norfolk Place, London W2 1PG, UK. ³⁹Department of Applied Science & Technology, University of California, Berkeley, California 94720, USA. ⁴⁰Genome Science Laboratory, Discovery and Research Institute, RIKEN Wakai Institute, 2-1 Hiroawa, Wako, Saitama, 351-0198, Japan. ⁴¹Department of Genetics, Yale University School of Medicine, 333 Cedar Street, New Haven, Connecticut 06510, USA. ⁴²Department of Pediatrics, University of Massachusetts Medical School, 55 Lake Avenue, North Worcester, Massachusetts 01605, USA. ⁴³Department of Statistics, University of California, Berkeley, California 94720, USA. ⁴⁴Institute for Molecular Bioscience, University of Queensland, St. Lucia, QLD 4072, Australia. ⁴⁵The Sanger Institute, 1399 Hyde Park Road, Santa Fe, New Mexico 87501, USA. ⁴⁶Department of Computer Science, Yale University, PO Box 208114, New Haven, Connecticut 06520-8114, USA. ⁴⁷Program in Computational Biology and Bioinformatics, Yale University, PO Box 208114, New Haven, Connecticut 06520-8114, USA. ⁴⁸NIH Intramural Sequencing Center, National Human Genome Research Institute, National Institutes of Health, Bethesda, Maryland 20892, USA. ⁴⁹Department of Computer Science and Engineering, The Pennsylvania State University, University Park, Pennsylvania 16802, USA. ⁵⁰Center for Comparative Genomics and Bioinformatics, Huck Institutes for Life Sciences, The Pennsylvania State University, University Park, Pennsylvania 16802, USA. ⁵¹Division of Extramural Research, National Human Genome Research Institute, National Institutes of Health, 5635 Fishers Lane, Suite 4076, Bethesda, Maryland 20892-9305, USA. ⁵²Office of the Director, National Human Genome Research Institute, National Institutes of Health, 31 Center Drive, Suite 4B09, Bethesda, Maryland 20892-2152, USA. ⁵³Department of Computer Science, Stanford University, Stanford, California 94305, USA. ⁵⁴Department of Biostatistics and Medical Informatics, University of Wisconsin-Madison, 6270 MSC, 1300 University Ave, Madison, Wisconsin 53706, USA. ⁵⁵Department of Zoology and Animal Biology, Faculty of Sciences, University of Geneva, 1205 Geneva, Switzerland. ⁵⁶Department of Statistics, Stanford University, Stanford, California 94305, USA. ⁵⁷Department of Biengineering, University of California, Berkeley, California 94720-1762, USA. ⁵⁸National Center for Biotechnology Information, National Institutes of Health, Bethesda, Maryland 20894, USA. ⁵⁹Department of Biochemistry and Molecular Biology, Huck Institutes of Life Sciences, The Pennsylvania State University, University Park, Pennsylvania 16802, USA. ⁶⁰Howard Hughes Medical Institute, University of California, Santa Cruz, California 95064, USA. ⁶¹Department of Biology, The Pennsylvania State University, University Park, Pennsylvania 16802, USA. ⁶²Department of Pathology, Stanford University School of Medicine, Stanford, California 94305, USA. ⁶³Human Genome Sequencing Center and Department of Molecular and Human Genetics, Baylor College of Medicine, Houston, Texas 77030, USA. ⁶⁴Department of Pathology, Washington University School of Medicine, Campus Box 8501, 4444 Forest Park Avenue, Saint Louis, Missouri 63108, USA. ⁶⁵Broad Institute of Harvard University and Massachusetts Institute of Technology, 320 Charles Street, Cambridge, Massachusetts 02141, USA. ⁶⁶Whitehead Institute for Biomedical Research, 9 Cambridge Center, Cambridge, Massachusetts 02142, USA. ⁶⁷Children's Hospital Oakland Research Institute, BACPAC Resources, 747 52nd Street, Oakland, California 94609, USA. ⁶⁸Ludwig Institute for Cancer Research, 9500 Gilman Drive, La Jolla, California 92093-0653, USA. ⁶⁹The Linnaeus Centre for Bioinformatics, Uppsala University, BMC, Box 598, SE-75124 Uppsala, Sweden. ⁷⁰Department of Pharmacology and the Genome Center, University of California, Davis, California 95616, USA. ⁷¹Institute for Cellular & Molecular Biology, The University of Texas at Austin, 1 University Station A4800, Austin, Texas 78712, USA. ⁷²NimbleGen Systems, Inc., 1 Science Court, Madison, Wisconsin 53711, USA. ⁷³University of Illinois Medical Science Center, Madison, Wisconsin 53706, USA. ⁷⁴Department of Genetics and Pathology, Rudbeck Laboratory, Uppsala University, SE-75185 Uppsala, Sweden. ⁷⁵University of California, San Diego School of Medicine, 9500 Gilman Drive, La Jolla, California 92093, USA. ⁷⁶Genes and Disease Program, Center for Genomic Regulation, c/o Dr. Aiguader 88, Barcelona Biomedical Research Park Building, 08003 Barcelona, Catalonia, Spain. ⁷⁷Broad Institute of MIT and Harvard, 7 Cambridge Center, Cambridge, Massachusetts 02142, USA. ⁷⁸Center for Statistical Genetics, Department of Biostatistics, SPH I1, 1420 Washington Heights, Ann Arbor, Michigan 48109-2029, USA. ⁷⁹Department of Statistics, University of Oxford, Oxford OX1 3TG, UK. ⁸⁰Universitat Pompeu Fabra, c/o Dr. Aiguader 88, Barcelona Biomedical Research Park Building, 08003 Barcelona, Catalonia, Spain. ⁸¹Present addresses: Department of Genome Sciences, University of Washington School of Medicine, Seattle, Washington 98195, USA (G.M.C.); Department of Biological Statistics & Computational Biology, Cornell University, Ithaca, New York 14853, USA (A.S.); Faculty of Life Sciences, University of Manchester, Michael Smith Building, Oxford Road, Manchester, M13 9PT, UK (S.W.); SwitchGear Genomics, 1455 Adams Drive, Suite 2015, Menlo Park, California 94025, USA (N.D.T.; S.F.A.).

411 Autoren aus 80 Institutionen

Publications in Each Year



Albert Einstein
1879-1955

150 Publikationen

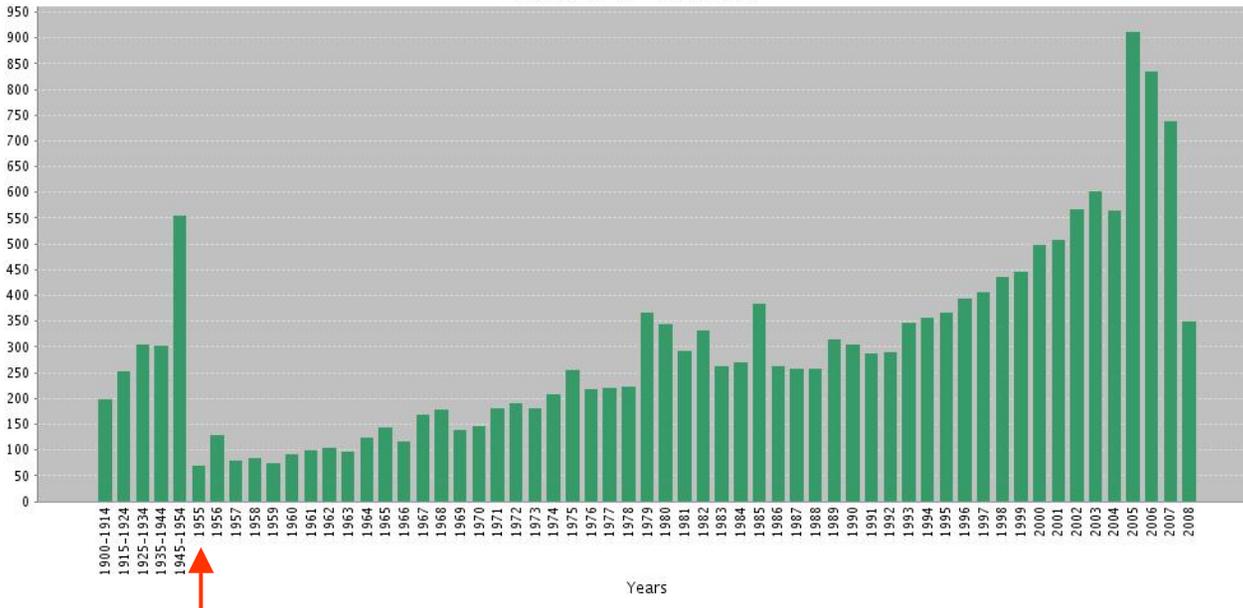
17 788 Zitate

119 Zitate/Artikel

163 Zitate/Jahr

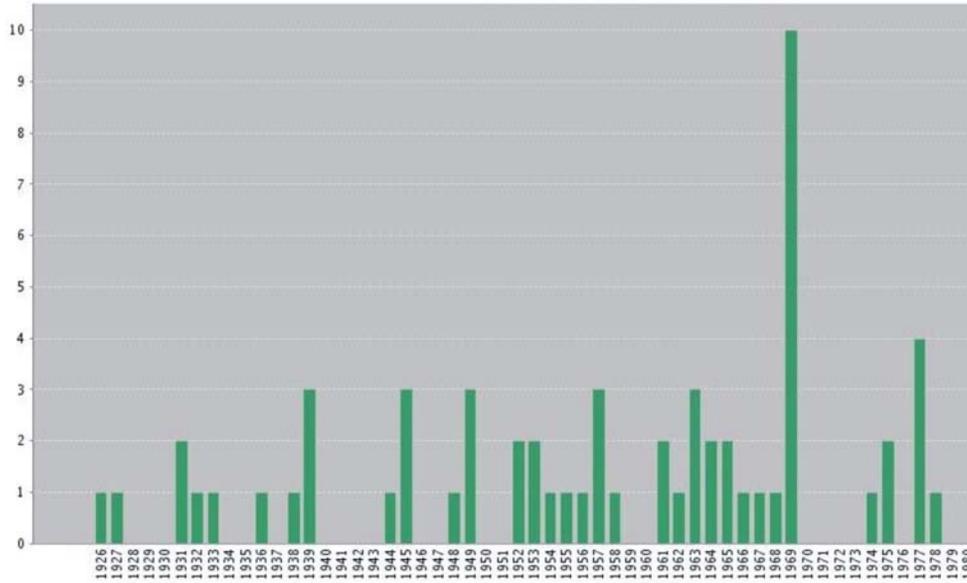
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Citations in Each Year



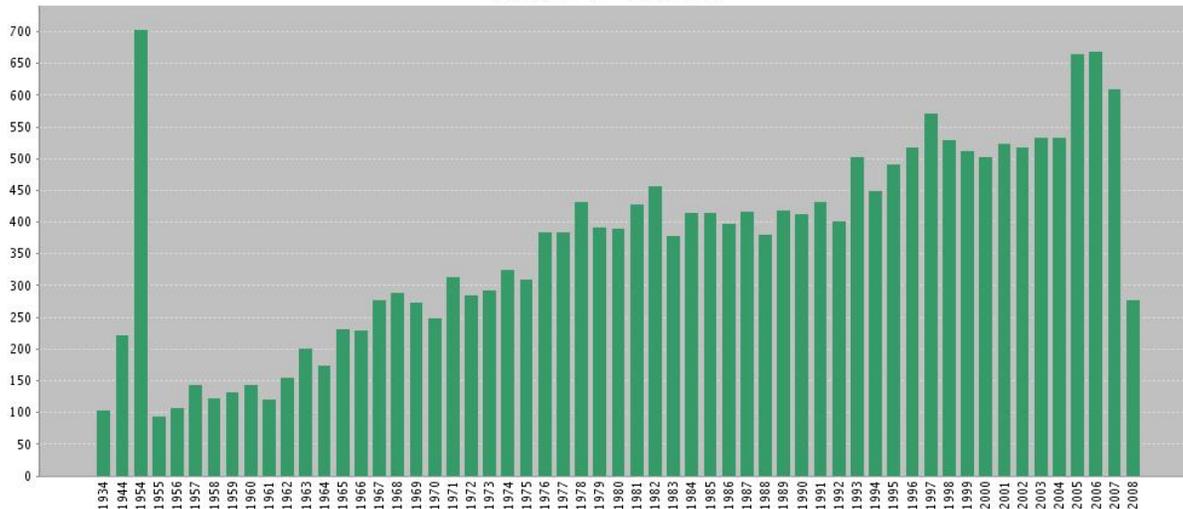
Nobelpreis für Physik, 1921

Publications in Each Year



Years

Citations in Each Year



Years



Lars Onsager
1903 -1976

62 Publikationen

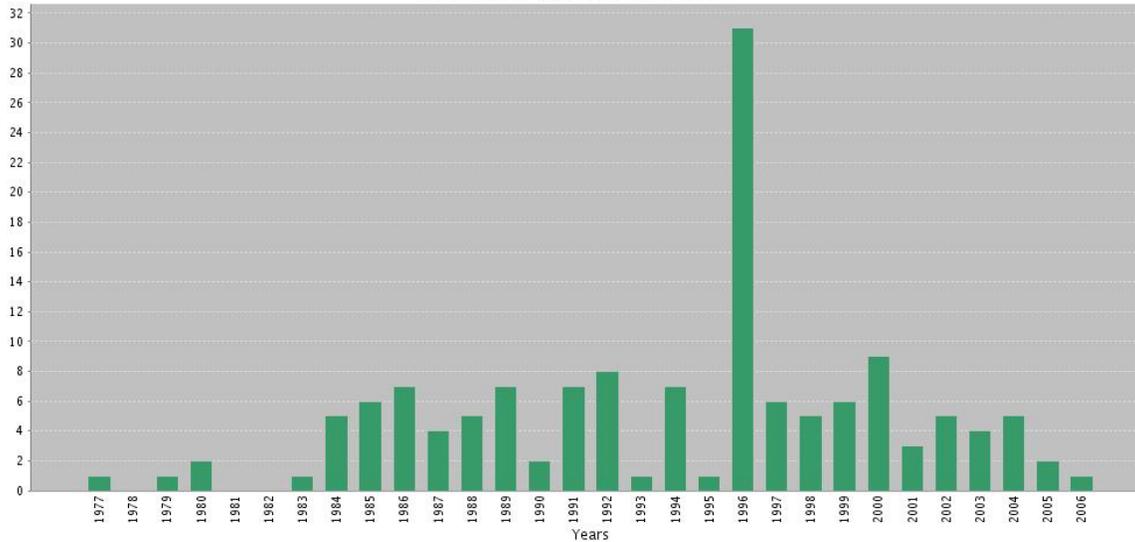
20 922 Zitate
337 Zitate/Artikel

248 Zitate/Jahr

h-Faktor: 37

Nobelpreis für Chemie, 1968

Published Items in Each Year



Christiane Nüsslein-Volhard

1942 -

142 Publikationen

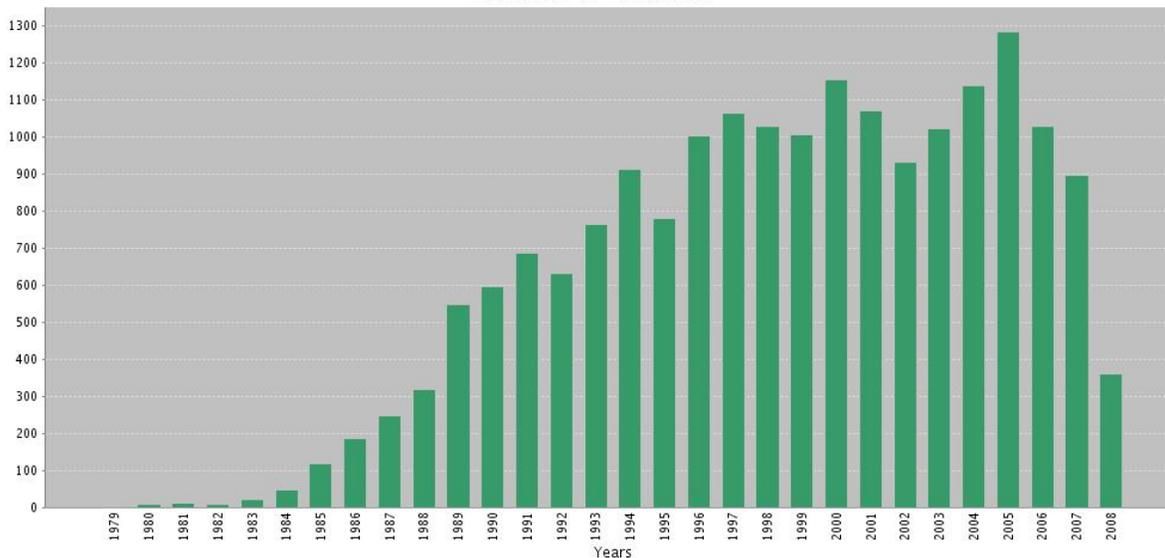
18 853 Zitate

133 Zitate/Artikel

589 Zitate/Jahr

h-Faktor: 78

Citations in Each Year



Nobelpreis für Medizin, 1995

Wissenschaftler	Zahl der Arbeiten	Zahl der Zitate	Zitate pro Arbeit	Zitate pro Jahr	h-Faktor	Nobelpreis
O. H. Lowry	41	76 452	1865	1195	30	
G. Scatchard	33	26 019	788	379	21	
L. Onsager	62	20 922	337	249	37	Chemie 1968
R. B. Woodward	191	19 109	100	258	69	Chemie 1965
C. Nüsslein-Volhard	142	18 853	133	589	78	Medizin 1995
A. Einstein	150	17 788	119	163	46	Physik 1921
F. H. C. Crick	82	15 573	190	264	39	Medizin 1962
Hochenergiephysiker	641	15 218	24	507	53	
J. D. Watson	188	14 052	75	238	43	Medizin 1962
E. N. Lorenz	64	7 660	120	104	26	
B. McClintock	27	5 011	186	60	33	Medizin 1983
E. W. Mayr	111	3 385	31	47	30	