

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



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Gründung 1958



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Gründung 1984



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Gründung 1930



European Media Laboratory Research,
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Gründung 2003



Perimeter Institute,
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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.

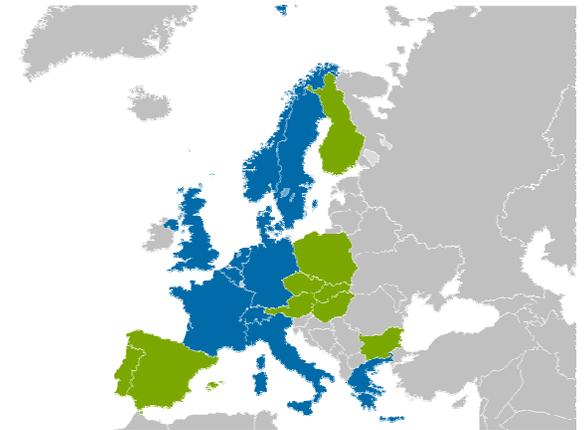
Mit ergebenen Grüssen

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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ALICE

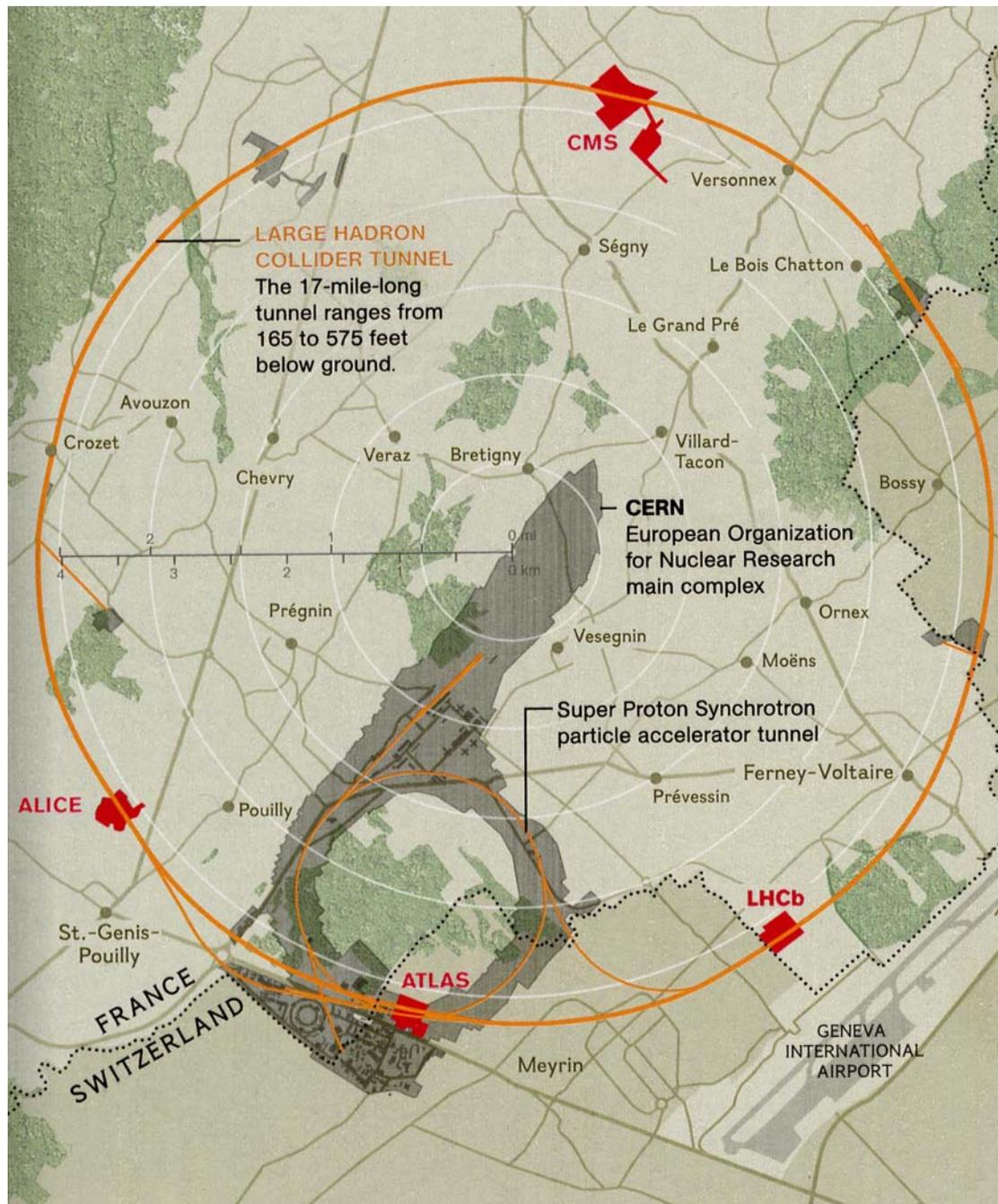
Will analyze the collisions of lead nuclei to study quark-gluon plasma, a state of matter that existed immediately after the big bang



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 $b \rightarrow s\gamma$

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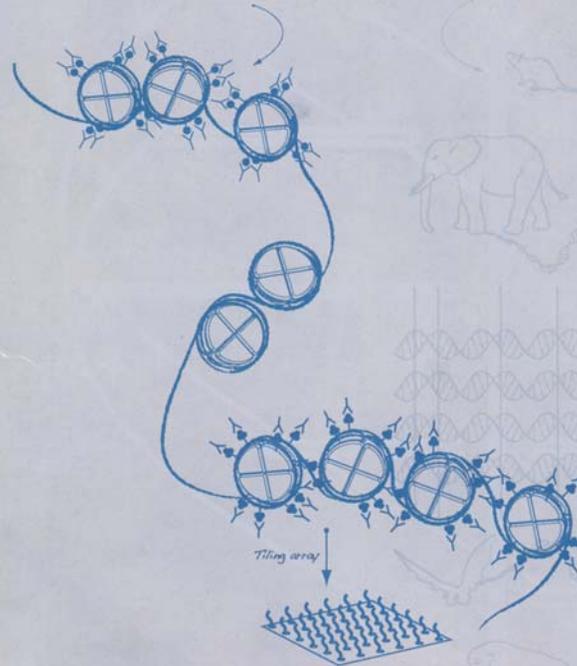


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Supplementary Information is linked to the online version of the paper at www.nature.com/nature.

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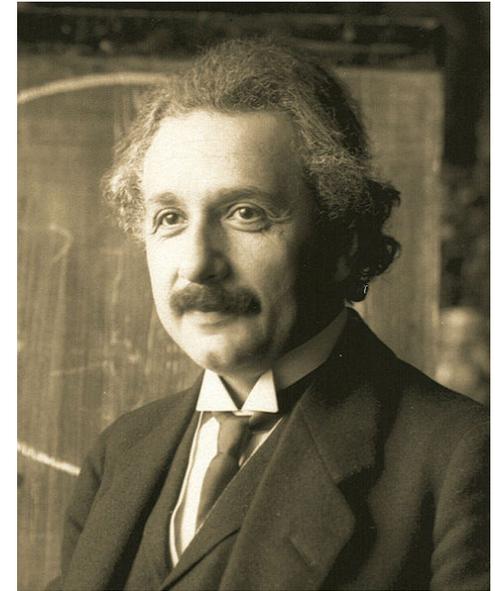
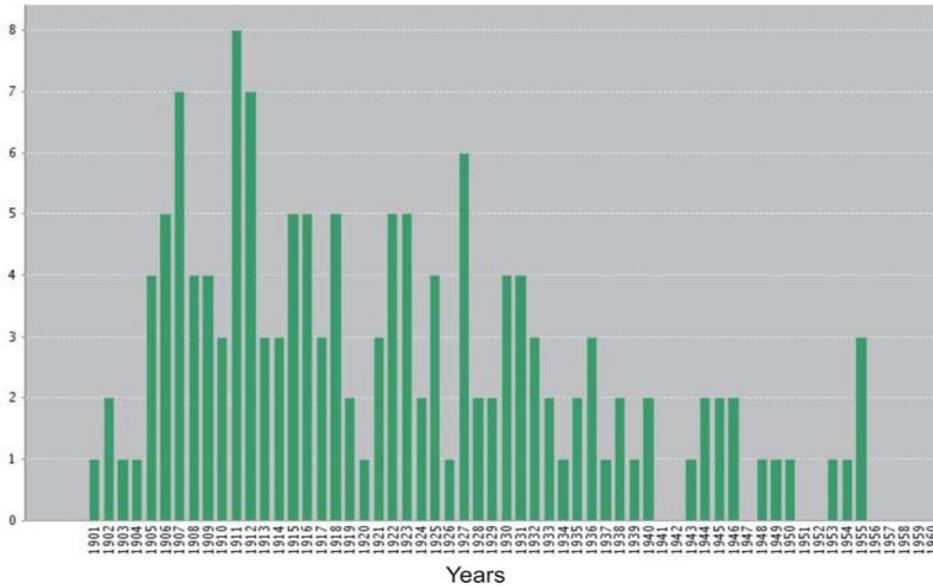
'NISC Comparative Sequencing Program Gerard G. Bouffard⁷, Xiaobin Guan⁴⁸, Nancy F. Hansen⁴⁸, Jacquelyn R. Idol¹, Valerie V. Maduro¹, Baishali Maskeri⁴⁸, Jennifer C. McDowell¹⁸, Morgan Park¹⁸, Pamela J. Thomas¹⁸, Alice C. Young¹⁸ & Robert W. Blakesley^{7,45} **Baylor College of Medicine, Human Genome 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

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411 Autoren aus 80 Institutionen

Publications in Each Year



Albert Einstein
1879-1955

150 Publikationen

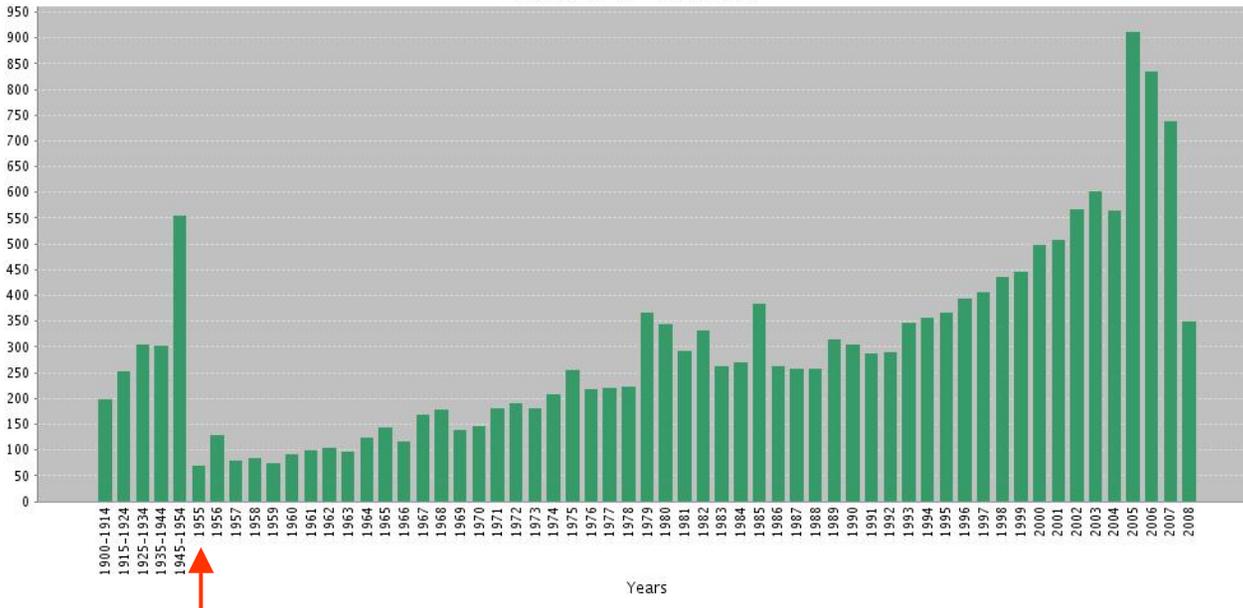
17 788 Zitate

119 Zitate/Artikel

163 Zitate/Jahr

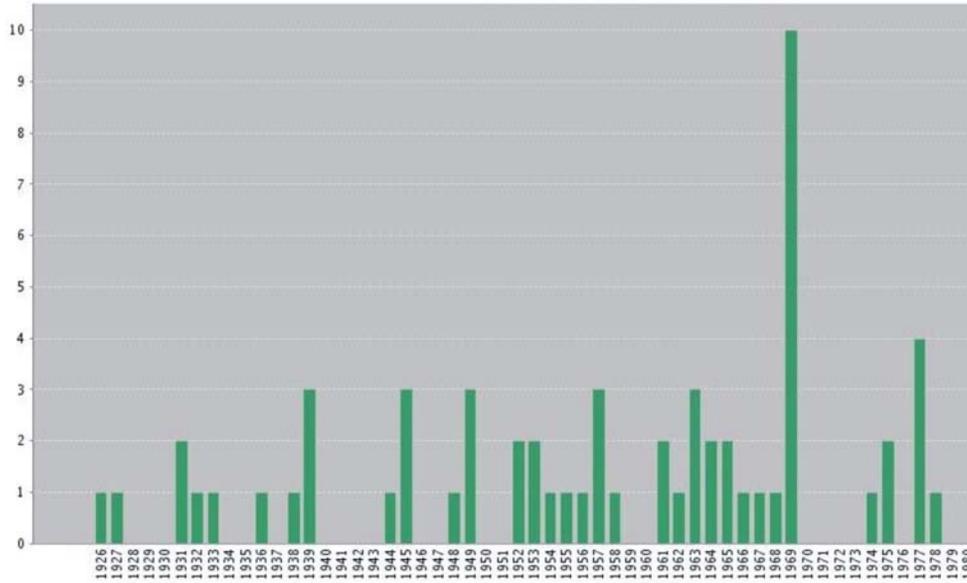
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Citations in Each Year



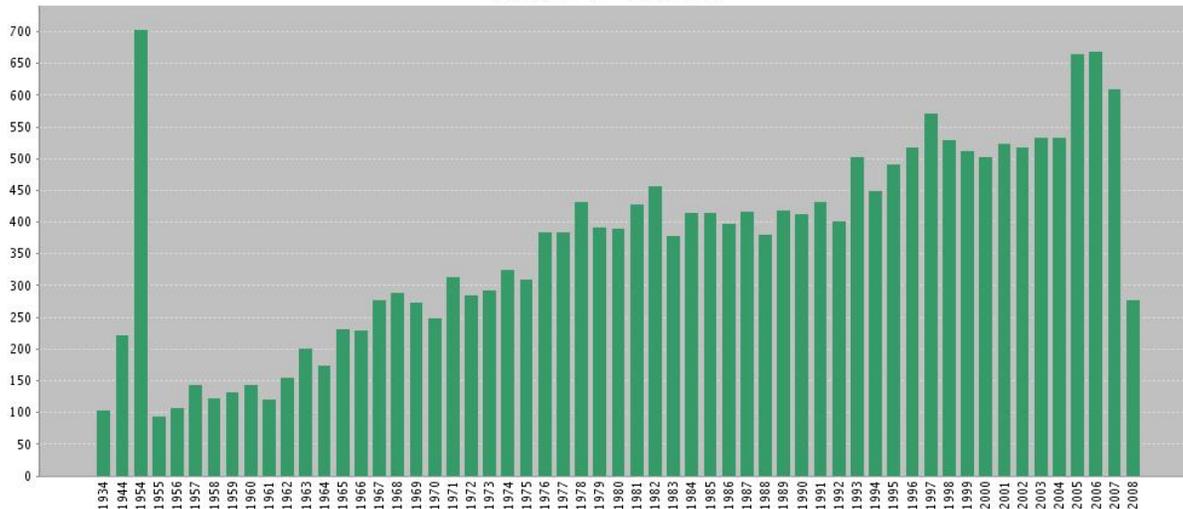
Nobelpreis für Physik, 1921

Publications in Each Year



Years

Citations in Each Year



Years



Lars Onsager
1903 -1976

62 Publikationen

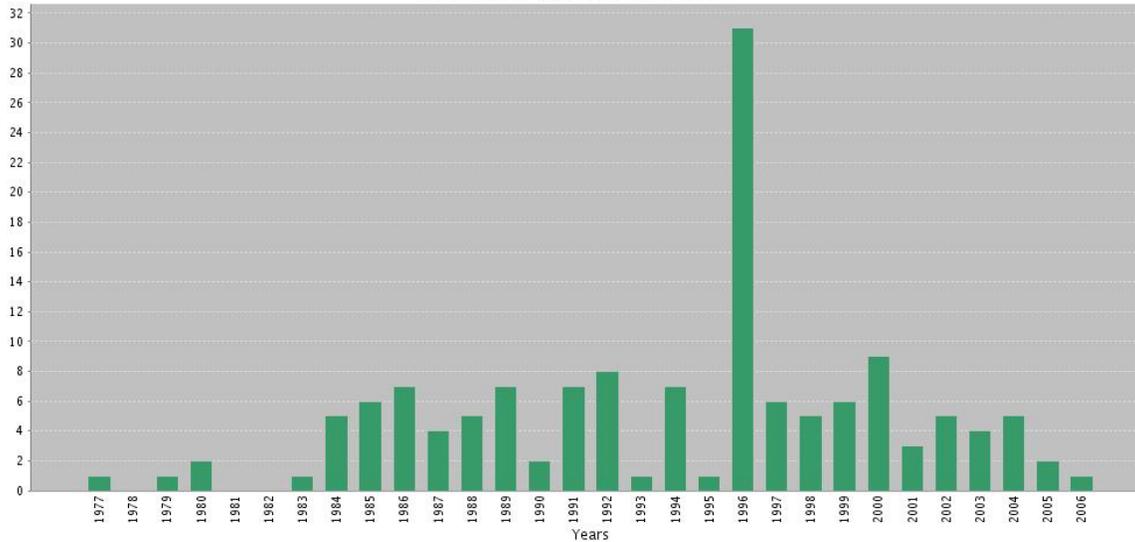
20 922 Zitate
337 Zitate/Artikel

248 Zitate/Jahr

h-Faktor: 37

Nobelpreis für Chemie, 1968

Published Items in Each Year



Christiane Nüsslein-Volhard

1942 -

142 Publikationen

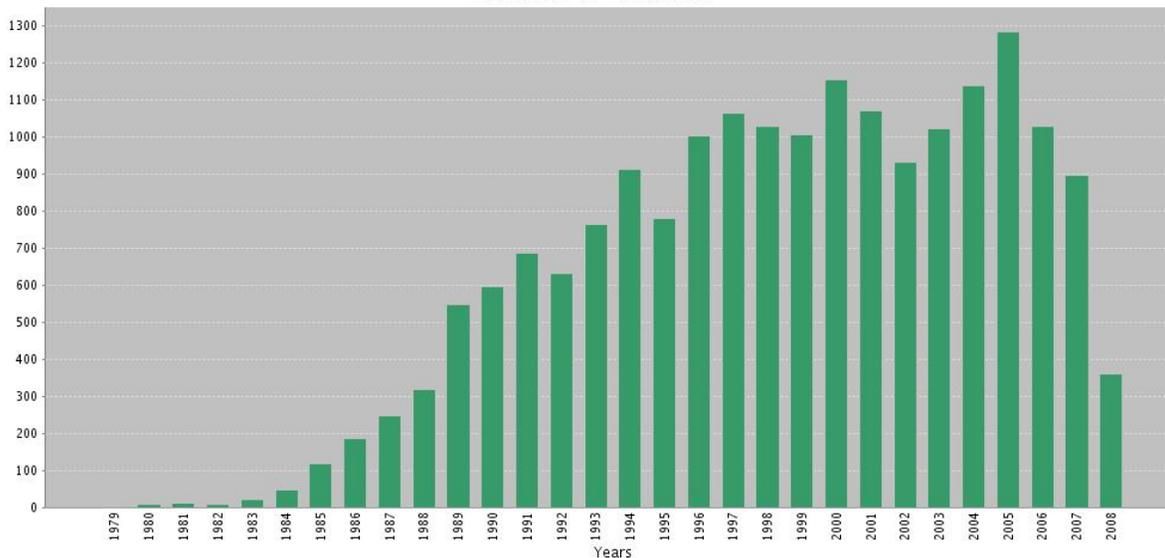
18 853 Zitate

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	