

Supplementary Information: Author Impact Factor: tracking the dynamics of individual scientific impact

Raj Kumar Pan¹ and Santo Fortunato¹

¹Department of Biomedical Engineering and Computational Science, Aalto University School of Science, P.O. Box 12200, FI-00076, Finland

METHODS

Here we use disambiguated “distinct author” data from Thomson Reuters (TR) Web of Knowledge, isiknowledge.com using their matching algorithms to identify publication profiles of distinct authors. Further, we use its portal ResearcherID.com, where users upload and maintain their publication profiles. We consider a total of 12 Nobel Laureates, 4 each in Physics, Chemistry and Physiology or Medicine. In addition we analyze 550 scientists divided into 4 categories. For the selection of high-impact physicists, we consider the 100 most prolific authors based on their publications in *Physical Review Letters* over the 50-year period 1958-2008. For the selection of high-impact cell biologists we choose the 100 most prolific scientists based on publications in the journal *CELL*. For the selection of high-impact mathematicians we selected the 50 authors with the highest

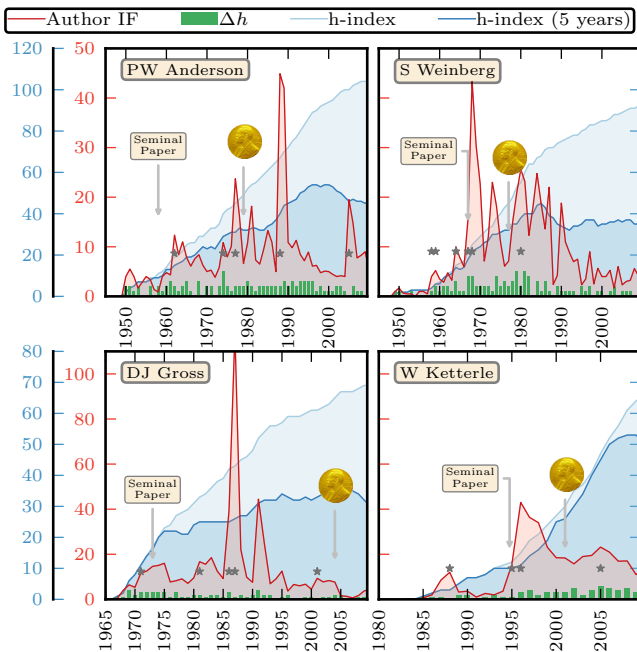


FIG. 1. Evolution of the author impact factor of four Nobel Laureates in Physics (red curve), compared to the evolution of the h -index of the author, of its yearly variation Δh and of the 5-years h index. In this case the aggregation period Δt of 2 years was used to calculate the author impact factor. Those years in which the AIF of a scientist significantly differs from his/her average AIF of the past 5 years are marked by a star. Photograph of Nobel Prize Medal in Physics taken by David Monniaux. Photo released under the following licence: David Monniaux/CC BY SA 2.0.

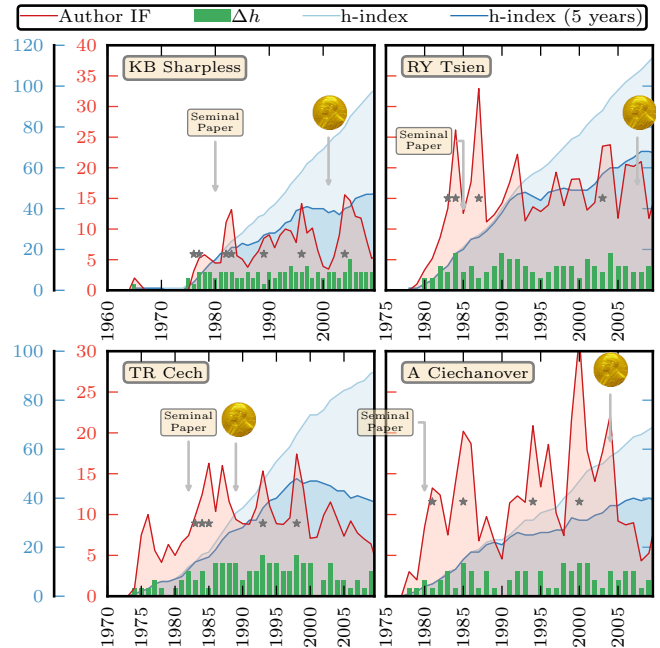


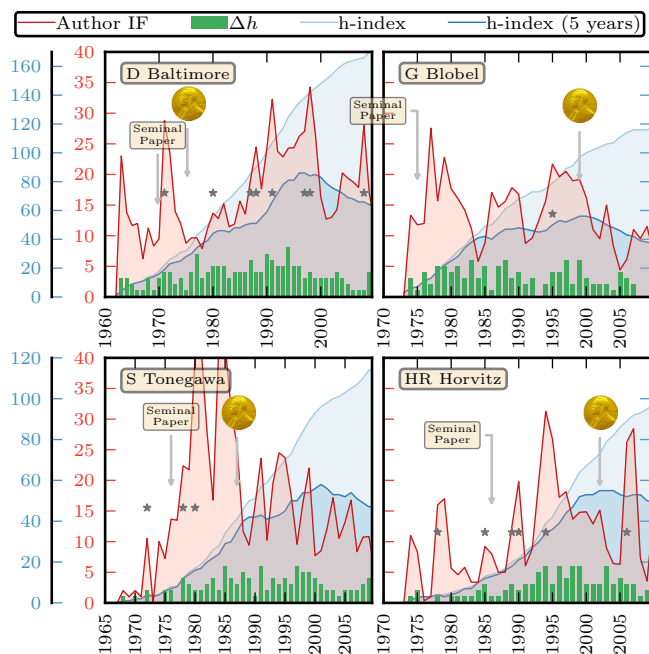
FIG. 2. Same as Fig. 3, for Nobel Laureates in Chemistry. Photograph of Nobel Prize Medal in Chemistry taken by David Monniaux. Photo released under the following licence: David Monniaux/CC BY SA 2.0.

number of publications in the prestigious journal *Annals of Mathematics*. We also consider 100 relatively young assistant professors from physics. To select the scientists in this dataset, we choose two assistant professors from each of the top 50 U.S. physics and astronomy departments ranked according to the magazine *U.S. News*.

To categorize each paper according to its field of publication we use the TR subject categories. We then aggregated these subject categories into broader scientific fields. A detailed description is provided in Table I

RESULTS

We used the aggregation period of 2 years to calculate the author impact factor (AIF) for the Nobel laureates in Physics (Fig. 1), Chemistry (Fig. 2), and Physiology or Medicine (Fig. 3). Although there are relatively more fluctuations, the variation of the AIF(2 years) is qualitatively similar to the variation of the AIF(5 years). The 2-year window is however short for most scientists, especially for the young ones. As the paper only shows the AIF for the most prominent scientists, both the 2-year



and 5-year AIF yield similar results.

FIG. 3. Same as Fig. 3, for Nobel Laureates in Physiology or Medicine. Photograph of Nobel Prize Medal in Physics taken by David Monniaux. Photo released under the following licence: David Monniaux/CC BY SA 2.0.

Fields	TR subject categories
Physics	IMAGING SCIENCE & PHOTOGRAPHIC TECHNOLOGY
	PHYSICS, APPLIED
	OPTICS
	INSTRUMENTS & INSTRUMENTATION
	PHYSICS, CONDENSED MATTER
	PHYSICS, FLUIDS & PLASMAS
	PHOTOGRAPHIC TECHNOLOGY
	PHYSICS, ATOMIC, MOLECULAR & CHEMICAL
	ACOUSTICS
	PHYSICS
	PHYSICS, MATHEMATICAL
	MECHANICS
	PHYSICS, NUCLEAR
	SPECTROSCOPY
	THERMODYNAMICS
	PHYSICS, PARTICLES & FIELDS
NUCLEAR SCIENCE & TECHNOLOGY	
PHYSICS, MULTIDISCIPLINARY	
ASTRONOMY & ASTROPHYSICS	
Mathematics	STATISTICS & PROBABILITY
	MATHEMATICS, APPLIED
	MATHEMATICS, INTERDISCIPLINARY APPLICATIONS
	LOGIC
	MATHEMATICS
Chemistry	MATHEMATICS, MISCELLANEOUS
	CHEMISTRY, INORGANIC & NUCLEAR
	ELECTROCHEMISTRY
	CHEMISTRY, PHYSICAL
	CHEMISTRY, ANALYTICAL
	POLYMER SCIENCE
	CHEMISTRY, MULTIDISCIPLINARY
	CRYSTALLOGRAPHY
	CHEMISTRY, APPLIED
	CHEMISTRY
CHEMISTRY, ORGANIC	

Physiology or Medicine	CYTOLOGY & HISTOLOGY BIOCHEMISTRY & MOLECULAR BIOLOGY CELL BIOLOGY BIOCHEMICAL RESEARCH METHODS CELL & TISSUE ENGINEERING MATHEMATICAL & COMPUTATIONAL BIOLOGY BIOPHYSICS BIOMETHODS MICROSCOPY ENGINEERING, BIOMEDICAL IMMUNOLOGY MEDICAL LABORATORY TECHNOLOGY MEDICINE, RESEARCH & EXPERIMENTAL PARASITOLOGY PHYSIOLOGY ANATOMY & MORPHOLOGY PATHOLOGY ONCOLOGY RHEUMATOLOGY VASCULAR DISEASES PSYCHIATRY GERIATRICS & GERONTOLOGY DENTISTRY, ORAL SURGERY & MEDICINE OPHTHALMOLOGY DENTISTRY/ORAL SURGERY & MEDICINE MEDICINE, LEGAL EMERGENCY MEDICINE & CRITICAL CARE CLINICAL NEUROLOGY TRANSPLANTATION HEMATOLOGY INFECTIOUS DISEASES RESPIRATORY SYSTEM PERIPHERAL VASCULAR DISEASE MEDICINE, GENERAL & INTERNAL PEDIATRICS EMERGENCY MEDICINE INTEGRATIVE & COMPLEMENTARY MEDICINE GASTROENTEROLOGY & HEPATOLOGY DERMATOLOGY REHABILITATION ANESTHESIOLOGY TROPICAL MEDICINE MEDICINE, MISCELLANEOUS ENDOCRINOLOGY & METABOLISM NEUROIMAGING ANDROLOGY ORTHOPEDICS OBSTETRICS & GYNECOLOGY ALLERGY CRITICAL CARE MEDICINE OTORHINOLARYNGOLOGY RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING SURGERY CARDIAC & CARDIOVASCULAR SYSTEMS DERMATOLOGY & VENEREAL DISEASES AUDIOLOGY & SPEECH-LANGUAGE PATHOLOGY RADIOLOGY & NUCLEAR MEDICINE UROLOGY & NEPHROLOGY CRITICAL CARE CARDIOVASCULAR SYSTEM
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TABLE I: Aggregation of TR subject categories in broader fields.