



**Crossref**



# Funding Data

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Kirsty Meddings  
@kmeddings

Linking research funding and published outcomes



We are Crossref, a not-for-profit membership organization for scholarly publishing, working to make content easy to find, cite, link and assess. We do it in five ways: rallying the community; tagging metadata; running a shared infrastructure; playing with new technology; and making tools and services to improve research communications.

**It's as simple—and as complicated—as that.**



# Funding data at Crossref

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A standard way of reporting funding sources for published scholarly research

# Funder Mandates

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Der Wissenschaftsfonds.



HORIZON 2020



Bone Marrow Research  
Volume 2012 (2012), Article ID 406796, 18 pages  
doi:10.1155/2012/406796

### Review Article


## Lineage Switching in Acute Leukemias: A Consequence of Stem Cell Plasticity?

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 [Abstract](#)

 [Full-Text PDF](#)

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 [Linked References](#)

 [How to Cite this Article](#)

### Acknowledgments

The authors apologize to investigators whose work could not be discussed due to space limitation. The authors thank the members of the Lymphopoiesis Lab from UIMEO, Dr. Aurora Medina, and Dr. Onofre Muñoz for critical input and academic support. R. Pelayo is recipient of funding from the National Council of Science and Technology, CONACYT (Grant CB-2010-01-152695) and the Mexican Institute for Social Security, IMSS (Grants 2008-785-044 and FIS/IMSS/852). E. Dorantes-Acosta is a scholarship holder from CONACYT.

# What's in a name?

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National Institutes of Health

NIH

N.I.H.

National Institute of Health

National Institute for Health

Abbreviations, misspellings, translations...

# The problems:

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Funding bodies cannot easily track the published output of funding

Publishers cannot easily report which articles result from research supported by specific funders or grants

Institutions cannot easily link funding received to published output

Lack of standard metadata for funding sources makes it difficult to analyse or data mine



# Open Funder Registry

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- 14,000+ funder handles and ID numbers from curated Elsevier SciVal registry
- Hosted by Crossref, available under CC0
- Updated and extended monthly
- Must be used to ensure consistency

A word cloud containing numerous names of research funding organizations and institutions. The text is arranged in a dense, overlapping manner, with some names appearing larger than others. The colors of the text are primarily shades of orange, red, and brown. Some of the visible names include: FetzerInstitute, BrainResearchTrust, WorldWildlifeFund, HappoldTrust, RoyalSociety, WellcomeTrust, HuntingtonLibrary, HeritageCouncil, StillbirthFoundation, LeukemiaResearch, JanssenBioTech, LibraryofCongress, TheMcLeanFoundation, MeyerFoundation, WolfsonFoundation, TheArtsCouncil, StanfordUniversity, CanadianLiverFoundation, SmithsonianInstitution, EarthwatchInstitute, BiomedicalSociety, MonsantoFund, AidsHealthcareFoundation, EpilepsyFoundation, ArthritisResearchUK, HudsonInstitute, Boeing, NationalScienceFoundation, U.S.FishandWildlifeService, MedicalResearchCouncil, DiabetesResearch, DSFCharitableFoundation, FoodStandardsAgency, KennedySpaceCenter, SpencerFoundation, MayoClinic, BaringFoundation, MaryKayFoundation, JFKMedicalCenterFoundation, BeckmanCoulterFoundation, OncologyNursingSociety, InstituteofBiomedicalScience, RobertBowneFoundation, Roche, DepartmentofHealthandHumanServices, SocialScienceResearchCouncil, SwedishResearchCouncil, Formas, AgeUK, TheForbesFund, GeologicalSocietyofAmerica, CamargoFoundation, TheMerckGenomeResearchInstitute, ActionCancer, InternationalMonetaryFund, Alzheimer'sSociety, NationalAcademyofSciences, Gamble, WashingtonResearchInstitute, BritishMedicalAssociation, AmericanAcademyofPediatrics, AmericanPsychiatricAssociation, Novartis, InovaHealthSystem, FoundationTelstra, ComputingResearchAssociation, AspenInstitute, AmericanAssociationforCancerResearch, AmeliaPeabodyCharitableFund, BayerHealthcare, NationalCenterforPublicHealthInformatics, GlaxoSmithKline, NationalAeronauticsandSpaceAdministration, BritishCouncil, WildlifeConservationSociety, CoeliacUK, U.S.DepartmentofHomelandSecurity, Unisys, LeukaemiaandLymphomaResearch, InstitutionofCivilEngineers, CentersforDiseaseControlandPrevention, SocietyofToxicology, U.S.FoodandDrugAdministration, NationalCenterforHealthResearch, JohnWayneFosterFoundation, HealthProtectionAgency, U.S.NationalLibraryofMedicine, AmericanSocietyofHematology, BritishThoracicSociety, InternationalFoundationforScience, OfficeoftheAttorneyGeneral, MeningitisResearchFoundation, LungAssociation, RoyalSocietyofMedicine, RoyalCollegeofPhysicians, AmericanGeophysicalUnion, Iams, Nokia, RonaldMcDonaldHouseCharities, East-WestCenter, U.S.DepartmentofEnergy, Pfizer, ParkinsonResearchFoundation, CiscoSystems, WorldHealthOrganization, AmericanCancerSociety, Procter, ChemicalInstituteofCanada, SocietyforEndocrinology, Eurostat, SpinaBifidaAssociation, EuropeanCommission, AndrewW.MellonFoundation, RockefellerFoundation, WorldCancerResearchFund, NationalInstitutesofHealth, EisenhowerFoundation, CysticFibrosisTrust, FulbrightCommission, MelindaGatesFoundation, Genzyme, ChildCancerFoundation, WellnessFoundation, EnergyFoundation, AmericanHeartAssociation, SkinCancerFoundation, BreastCancerAlliance, KaiserPermanente, SabinVaccineInstitute, CureForLifeFoundation, GettyFoundation, PublicHealthInstitute, CollinsFoundation, DedalusFoundation, PasteurFoundation, AustralianMuseum, CancerResearchUK, KesslerFoundation, AsthmaFoundation, AstraZeneca, SiemensFoundation, MigraineTrust, DannonInstitute, MarineInstitute, and CancerAustralia.

# Steps for publishers

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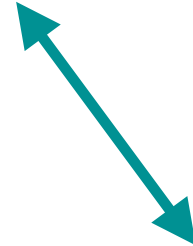
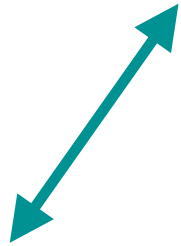
1. Collect funding data from authors on submission\*  
and/or  
Extract funder names and grant numbers from  
acknowledgements
2. QA!
3. Match funder name to funder ID in Open Funder Registry
4. Deposit funder name, funder ID and grant number with  
Crossref

\*Provide clear instructions so that they give you the right information

DOI

Funding  
Source

Award  
Number



# Discoverable metadata

Search **14,200** funders connected to  
**1,339,466** published works with funding  
data

 Search funders...

<http://search.crossref.org/funding>

Search **14,200** funders connected to  
**1,339,466** published works with funding  
data

Q nsf|

Office of the Director United States

National Stroke Foundation Australia

National Science Foundation United States

National Sleep Foundation United States

Statens Naturvidenskabelige Forskningsrad Denmark

Norsk Sykepleierforbund Norway

Center for Hierarchical Manufacturing, National Science Foundation United States

National Natural Science Foundation of China China

## WELLCOME TRUST

## TYPE

- Journal Article (7,340)
- Dataset (87)
- Chapter (3)
- Conference Paper (3)

## YEAR

- 2016 (2,639)
- 2015 (1,538)
- 2014 (908)
- 2017 (843)
- 2013 (443)
- 2012 (349)
- 2011 (230)
- 2010 (215)
- 2009 (36)
- 2002 (30)

## PUBLICATION

- eLife (248)
- NeuroImage (212)
- Proceedings of the National Academy of Sciences (172)
- PLOS ONE (154)
- Malaria Journal (74)

SORT BY: **RELEVANCE** PUBLICATION YEAR[DOWNLOAD AS CSV](#)

PAGE 1 OF 7,433 RESULTS

## The Residual Innate Lymphoid Cells in NFIL3-Deficient Mice Support Suboptimal Maternal Adaptations to Pregnancy

**Journal Article** published **19 Feb 2016** in **Frontiers in Immunology** volume **7**

Research funded by Wellcome Trust (094073/Z/10/Z) | Leukaemia and Lymphoma Research (13010) | National Institute for Health Research (Cambridge Biomedical Research Centre) | Seventh Framework Programme (Marie Curie Fellowship) | British Heart Foundation (FS/12/4/29254)

Authors: Selma Boulenuar, Jean-Marc Doisne, Amanda Sferruzzi-Perri, Louise M. Gaynor, Jens Kieckbusch, Elisa Balmas, Hong Wa Yung, Shagayegh Javadzadeh, Léa Volmer, Delia A. Hawkes, Keli Phillips, Hugh J.M. Brady, Abigail L. Fowden, Graham ...

<https://doi.org/10.3389/fimmu.2016.00043> [Actions](#)

## Remembering Components of Food in Drosophila

**Journal Article** published **19 Feb 2016** in **Frontiers in Integrative Neuroscience** volume **10**

Research funded by Wellcome Trust (WT090924)

Authors: Gaurav Das, Suewei Lin, Scott Waddell

<https://doi.org/10.3389/fnint.2016.00004> [Actions](#)

## Why is Cognitive Enhancement Deemed Unacceptable? The Role of Fairness, Deservingness, and Hollow Achievements

**Journal Article** published **19 Feb 2016** in **Frontiers in Psychology** volume **7**

Research funded by Wellcome Trust (100705/Z/12/Z, 086041/Z/08/Z) | Oxford Martin School, University of Oxford (Oxford Martin Programme on Resource Stewardship)

DOI	Type	Year	Title	Publication	Authors	Funders	Awards
http://dx.doi.org/10.1016/j.aquaculture.2014.10.032	Journal Article	2015	Tropical seaweeds for human food	Aquaculture	Ricardo Radulovich, Scher	World Bank Group, Bill and Melinda Gates Foundation	OPP1045878
http://dx.doi.org/10.1016/j.scitotenv.2014.09.040	Journal Article	2015	Validation of Bacteroidales quantification	Science of The Total Environment	Mitsunori Odagiri, Alexan	Bill and Melinda Gates Foundation	OPP1008084
http://dx.doi.org/10.1016/j.jad.2014.05.039	Journal Article	2014	Postpartum depressive symptoms and	Journal of Affective Disorders	Laura L. Pendergast, Rebe	Fogarty International Center, Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1080/17441692.2014.1003571	Journal Article	2015	Contributions of an intensive HIV prevention	Global Public Health	Sowmya Ramesh, Purnim	Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.nantod.2014.09.006	Journal Article	2014	Surgical materials: Current challenges	Nano Today	Nasim Annabi, Ali Tamay	Natural Sciences and Engineering Research Council of Canada, Bill and Melinda Gates Foundation	10847287, 1033746
http://dx.doi.org/10.1063/1.4905616	Journal Article	2015	Multifunctional surfaces produced by	Journal of Applied Physics	A. Y. Vorobyev, Chunlei G	Air Force Office of Scientific Research, Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.watres.2014.11.031	Journal Article	2015	Direct electrochemical oxidation of	Water Research	Hanspeter ZÄ¶llig, Cristina	Bill and Melinda Gates Foundation	OPP1011603
http://dx.doi.org/10.1016/j.jcom.2014.10.001	Journal Article	2014	Building good management practices	Journal of Co-operative Organization	Todd Benson	Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.ajo.2014.06.012	Journal Article	2014	Visual Impairment and Blindness in	American Journal of Ophthalmology	Jost B. Jonas, Rupert R.A.	Fred Hollows Foundation, Bill and Melinda Gates Foundation, Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.parint.2014.11.016	Journal Article	2015	Enhancing longevity of Plasmodium	Parasitology International	Emily J. Lupton, Alison Ro	University of South Florida College of Public Health International Center for Parasitology and Entomology	OPP1023643
http://dx.doi.org/10.1016/j.buildenv.2014.12.026	Journal Article	2015	Using sensitivity analysis to improve	Building and Environment	David Pudleiner, Jonathan	Bill and Melinda Gates Foundation	OPP1060817
http://dx.doi.org/10.7554/elife.03925	Journal Article	2015	Vitamin A supplements, routine immunization	eLife	Maria-Graciela Holm-Del	Wellcome Trust, Fonds de Recherche du QuÄ©bec - SantÄ©, Bill and Melinda Gates Foundation	OPP1068048, OPP1068048
http://dx.doi.org/10.1155/2014/837929	Journal Article	2014	Antibiotic Use as a Tragedy of the Commons	Computational and Mathematical Sciences	Kieran S. O'Brien, Seth Bl	National Institutes of Health, Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.ijpdr.2014.09.001	Journal Article	2014	Repurposing of approved drugs for	International Journal for Parasitology	Kelly L. Johnston, Louise F	Liverpool School of Tropical Medicine., Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.actatropica.2014.06.013	Journal Article	2014	Characterization of breeding sites of	Acta Tropica	Aviad Moncaz, Oscar Kirst	Bill and Melinda Gates Foundation	OPPGH5336
http://dx.doi.org/10.1016/j.ab.2014.08.025	Journal Article	2014	Quadruplex priming amplification of	Analytical Biochemistry	Shota Gogichaishvili, Leva	Shota Rustaveli National Science Foundation (Republic of Georgia)	
http://dx.doi.org/10.1016/j.actatropica.2014.09.003	Journal Article	2015	Evaluation of banked urine samples	Acta Tropica	Govert J. van Dam, Peter	Bill and Melinda Gates Foundation, University of Georgia Research Experiment Station	
http://dx.doi.org/10.1016/j.foodres.2014.03.021	Journal Article	2014	Comprehensive peptidomic and glycomics	Food Research International	David C. Dallas, Valerie W	U.S. Department of Agriculture, National Institutes of Health, Penn State University	
http://dx.doi.org/10.1016/j.ijgo.2014.07.010	Journal Article	2014	The FIGO Leadership in Obstetrics and	International Journal of Gynecology and Obstetrics	David J. Taylor, Bart Vand	Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.yexmp.2015.01.011	Journal Article	2015	A multiplex PCR assay for the simultaneous	Experimental and Molecular Pathology	Ahmad N. Abou Tayoun, F	Bill and Melinda Gates Foundation	OPP1028794
http://dx.doi.org/10.1016/j.jconrel.2015.03.017	Journal Article	2015	Inverse micellar sugar glass (IMSG)	Journal of Controlled Release	Ankit Mittal, Kai Schulze,	Bill and Melinda Gates Foundation	OPP1015136
http://dx.doi.org/10.1039/c4sc04004j	Journal Article	2015	Effect of phenolic glycolipids from	Chem. Sci.	Hassan R. H. Elsaïdi, Todd	Bill and Melinda Gates Foundation, Canadian Institutes of Health Research	OPP1039665
http://dx.doi.org/10.1016/j.jeoa.2014.08.007	Journal Article	2015	Bonus or mirage? South Africa's	The Journal of the Economics of Africa	MornÄ© J. Oosthuizen	International Development Research Centre, Bill and Melinda Gates Foundation	GRC09509
http://dx.doi.org/10.1155/2013/108630	Journal Article	2013	The Association between Noncommunicable	AIDS Research and Treatment	Renuka Pulikallu Somanat	Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1039/c4lc00716f	Journal Article	2014	Blood coagulation screening using a	Lab Chip	H. Li, D. Han, G. M. Paulet	Directorate for Engineering, Bill and Melinda Gates Foundation	OPP1087022
http://dx.doi.org/10.7554/elife.02851	Journal Article	2014	Global distribution maps of the leishmaniasis	eLife	David M Pigott, Samir Bha	Biotechnology and Biological Sciences Research Council, Wellcome Trust	
http://dx.doi.org/10.1016/j.agee.2014.06.001	Journal Article	2014	Integration of conservation agriculture	Agriculture, Ecosystems & Environment	Ranjan Laik, Sheetal Shar	Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1016/j.ijpharm.2014.08.039	Journal Article	2014	Manufacturing scale-up of electrospun	International Journal of Pharmaceutics	Emily A. Krogstad, Kim A.	National Institutes of Health, Bill and Melinda Gates Foundation	OPP1067729
http://dx.doi.org/10.7554/elife.04395	Journal Article	2014	Mapping the zoonotic niche of Ebola	eLife	David M Pigott, Nick Gold	Biotechnology and Biological Sciences Research Council, National Institutes of Health	R01LM10812
http://dx.doi.org/10.1016/j.tube.2014.05.003	Journal Article	2014	Isolation and purification of Mycobacterium	Tuberculosis	Libin Shi, Gavin J. Ryan, Su	Bill and Melinda Gates Foundation	OPP 1034945
http://dx.doi.org/10.1155/2011/980594	Journal Article	2011	Changing Concepts of Latent Tuberculosis	Clinical and Developmental Immunology	Stephen D. Lawn, Robin V	Wellcome Trust, National Institutes of Health, Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1021/es500197h	Journal Article	2014	Evaluation of Solid Fuel Char Briquette	Environmental Science & Technology	Barbara J. Ward, Tesfayoh	Engineering Excellence Fund, University of Colorado, Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1021/es502319n	Journal Article	2014	Synthesis and Application of Resorbable	Environmental Science & Technology	Germinal Magro, Robert E	Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1155/2012/638429	Journal Article	2012	Elimination of Onchocerca volvulus	Journal of Parasitology Research	Nancy Cruz-Ortiz, Rodrigo	Bill and Melinda Gates Foundation, Centers for Disease Control and Prevention	
http://dx.doi.org/10.1021/ja4125884	Journal Article	2014	Homochiral and meso Figure Eight	Journal of the American Chemical Society	Nandhini Ponnuswamy, F	University of Bath, Bill and Melinda Gates Foundation, Engineering and Physical Sciences Research Council	NA
http://dx.doi.org/10.7554/elife.00626	Journal Article	2013	Predicting mosquito infection from	eLife	Thomas S Churcher, Teun	Bill and Melinda Gates Foundation, European Commission	HEALTH-F3-2008-2
http://dx.doi.org/10.7554/elife.00675	Journal Article	2013	Temporal transcriptional response	eLife	Katherine Noelani Chang,	Gordon and Betty Moore Foundation, U.S. Department of Energy	DE-FG03-00ER151
http://dx.doi.org/10.5402/2012/649412	Journal Article	2012	Qualification of Staff, Organization	ISRN Obstetrics and Gynecology	Maman Dogba, Pierre Fou	Bill and Melinda Gates Foundation	
http://dx.doi.org/10.1021/cm501596s	Journal Article	2014	Fabrication of Low-Cost Paper-Based	Chemistry of Materials	Martin M. Thuo, Ramses	Division of Materials Research, U.S. Department of Energy, Bill and Melinda Gates Foundation	PHY-0646094
http://dx.doi.org/10.5402/2012/953401	Journal Article	2012	Neonatal Deaths in Rural Southern	ISRN Pediatrics	Mwifadhi Mrisho, David S	Bill and Melinda Gates Foundation	

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  status: "ok",
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  message-version: "1.0.0",
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        ],
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              9
            ]
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            given: "Xiaoze"
          },
          {
            family: "Goldberg",
            given: "David"
          },
          {
            family: "Menon",
            given: "Vinod M."
          }
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          "Optics Express"
        ],
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        deposited: {

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st",
0",
5,
all,
```

<http://api.crossref.org>



# API access

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Allows other systems to access the funding data



CHORUS



**CHORUS** *Advancing Public Access to Research*

Clearinghouse for the Open Research of the  
United States

Uses Crossref funding data to provide US  
Federal Agencies with dashboards, compliance



SHARE is building a free, open, data set about research and scholarly activities across their life cycle.

# This is your metadata

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Deposit funding data with Crossref so that funders can locate and record published outcomes

Deposit good quality funding data - funder names without funder IDs can be displayed but not counted

Give authors clear instructions and guidance on citing funders correctly

- Full funder name not project acronym

- Include grant numbers

# DOI registration on acceptance

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“Early minting”

Deposit metadata on acceptance, not at publication

Timely notification for funders, repositories

Coming in 2017...

# Summary

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Crossref's database is the only central source of standardised funding acknowledgement metadata from publications

Accuracy of funding metadata is critical

An increasing number of organizations and projects rely on this funding data to identify content and check compliance with funder policies

Get involved and make the funding data from your publications available, accurate and transparent

# Any Questions?

[www.crossref.org/fundingdata](http://www.crossref.org/fundingdata)

[kmeddings@crossref.org](mailto:kmeddings@crossref.org)

**@kmeddings**

