

# 1. Basics of research work

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## 1.4. Ethical rules for scientific work

### When doing research one should:

- Build on existing knowledge - a breakthrough discovery can be made through the falsification of an accepted theory
- Avoid re-discovering already discovered
- Not formulate hypothesis without a good knowledge of the literature
- Promote the public good, reduce private interests and publish results regularly. This is even promised at graduation.

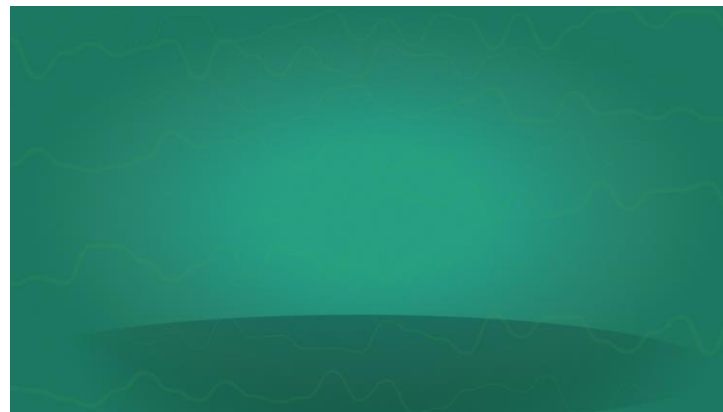
# 1. Basics of research work

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## 1.4. Ethical rules for scientific work

Although there is no universally accepted code of ethics for experimental research, there are some rules that should be followed. **What are they?**

- **honestly communicating all results and methods**
- **accepting the priority of scientific discovery**
- **acknowledging ideas and results of others**
- **avoiding excessive editing, fabrication or hiding of results**



[Ethics | Biology | FuseSchool - YouTube](#)

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## 1.4. Ethical rules for scientific work

### The most frequent mistakes:

- intentional ignorance of already known facts
- hiding the intellectual source
- „suitable“ adjusting of results - e.g. hiding of unclear results
- premature publishing or repeated publishing of the same results
- pretending the practical applicability
- plagiarism - both in case of original contributions and projects

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## Examples of retracted scientific reports

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**RETRACTED ARTICLE**

See: [Retraction Notice](#)

Nature, 2008 Dec 18;456(7224):962-6. doi: 10.1038/nature07409. Epub 2008 Oct 26.

**Generation of cell polarity in plants links endocytosis, auxin distribution and cell fate decisions.**

Dhonukshe P<sup>1</sup>, Tanaka H, Goh T, Ebine K, Mähönen AP, Prasad K, Blilou I, Geldner N, Xu J, Uemura T, Chory J, Ueda T, Nakano A, Scheres B, Friml J.

[Author information](#)

**Retraction in**  
Retraction: Generation of cell polarity in plants links endocytosis, auxin distribution and cell fate decisions. [Nature. 2014]

**Abstract**  
Dynamically polarized membrane proteins define different cell boundaries and have an important role in intercellular communication—a vital feature of multicellular development. Efflux carriers for the signalling molecule auxin from the PIN family are landmarks of cell polarity in plants and have a crucial involvement in auxin distribution-dependent development including embryo patterning, organogenesis and tropisms. Polar PIN localization determines the direction of intercellular auxin flow, yet the mechanisms generating PIN polarity remain unclear. Here we identify an endocytosis-dependent mechanism of PIN polarity generation and analyse its developmental implications. Real-time PIN tracking showed that after synthesis, PINs are initially delivered to the plasma membrane in a non-polar manner and their polarity is established by subsequent endocytic recycling. Interference with PIN endocytosis either by auxin or by manipulation of the Arabidopsis Rab5 GTPase pathway prevents PIN polarization. Failure of PIN polarization transiently alters asymmetric auxin distribution during embryogenesis and increases the local auxin response in apical embryo regions. This results in ectopic expression of auxin pathway-associated root-forming master regulators in embryonic leaves and promotes homeotic transformation of leaves to roots. Our results indicate a two-step mechanism for the generation of PIN polar localization and the essential role of endocytosis in this process. It also highlights the link between endocytosis-dependent polarity of individual cells and auxin distribution-dependent cell fate establishment for multicellular patterning.

PMID: 18953331 PMCID: [PMC2692841](#) DOI: [10.1038/nature07409](#)

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Retraction | Published: 16 July 2014

## Retraction: Generation of cell polarity in plants links endocytosis, auxin distribution and cell fate decisions

[Pankaj Dhonukshe](#), [Hirokazu Tanaka](#), [Tatsuaki Goh](#), [Kazuo Ebine](#), [Ari Pekka Mähönen](#), [Kalika Prasad](#), [Ikram Blilou](#), [Niko Geldner](#), [Jian Xu](#), [Tomohiro Uemura](#), [Joanne Chory](#), [Takashi Ueda](#), [Akihiko Nakano](#), [Ben Scheres](#) & [Jiří Friml](#)

*Nature* **511**, 370 (17 July 2014) | [Download Citation](#)

[The original article](#) was published on 26 October 2008

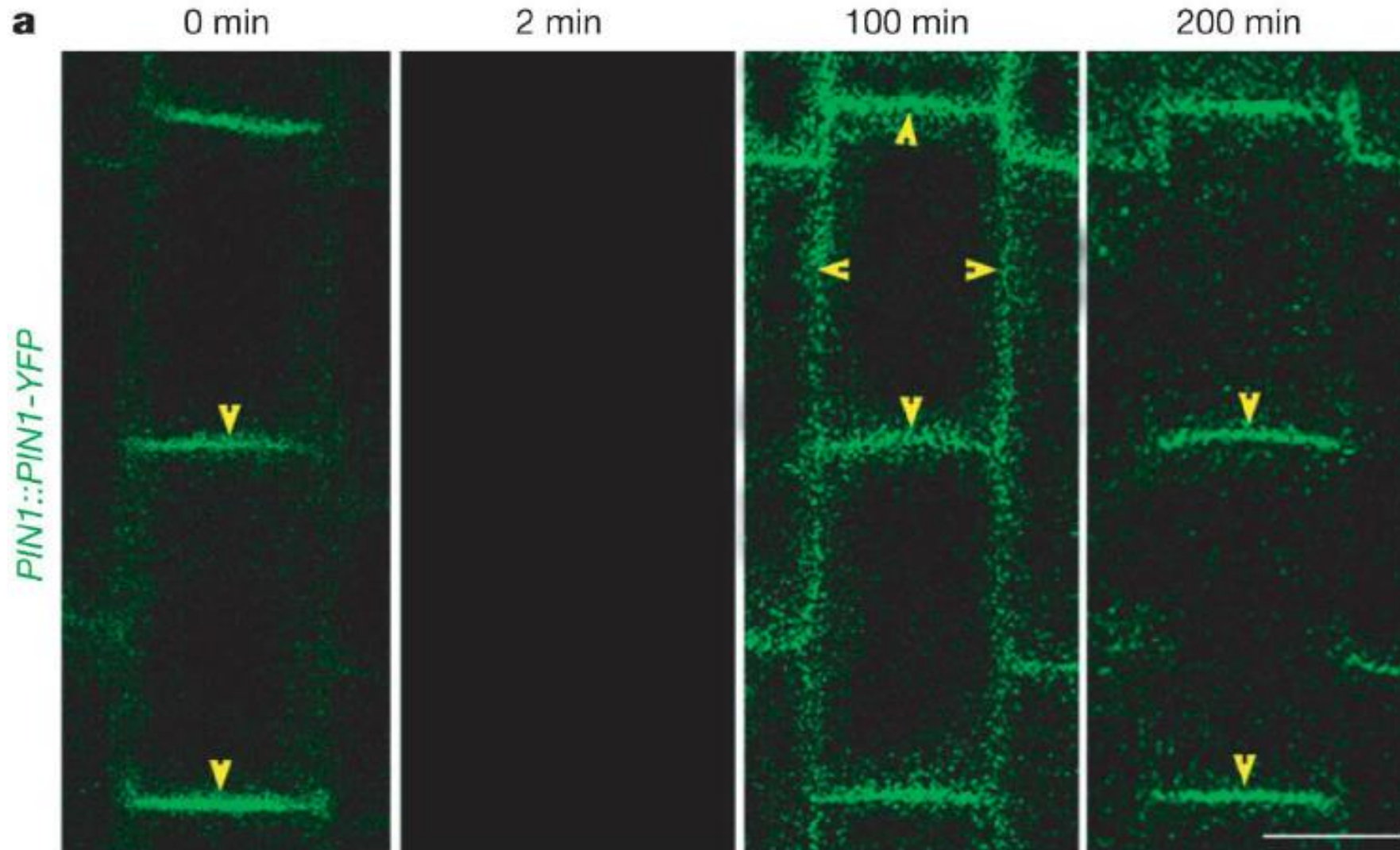
Access provided by Charles University Faculty of Science

*Nature* **456**, 962–966 (2008); doi:10.1038/nature07409

Our Letter reported that PIN transporters for the plant hormone auxin are initially delivered to the plasma membrane in a non-polar manner and that their polar distribution requires endocytosis. Abolishing PIN



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## Retraction of 19-year-old Nature paper reveals hidden cameras, lab break-in, evidence tampering

We've often found that when some authors refuse to sign retraction notices, there's a much bigger story than terse notices let on. And a retraction in this week's *Nature* of a 19-year-old paper is a shining example of that.



Here's the [brief notice](#) for "Oligosaccharide ligands for NKR-P1 protein activate NK cells and cytotoxicity," a 1994 paper by researchers from the UK and the Czech Republic that had already been subject to a [1996 correction](#):

*We wish to retract this Article owing to an inability to reproduce the results. This retraction has not been signed by K.B. and A.F., and M.P. is deceased (J.O'B. cannot be traced).*

K.B. is Karel Bezouska, then working in the lab of corresponding author Ten Feizi at The Glycosciences Laboratory at Northwick Park Hospital, Middlesex, UK. Bezouska, it turns out, was [found by an ethics committee at Charles University](#) (Google translation of a January 2013 press release from Czech) to have:



## Známý vědec v noci vnikl do cizí laboratoře, měnil prý výsledky pokusu

19. dubna 2012 21:12

Tajně nainstalované kamery s nočním viděním zachytily profesora Karla Bezoušku v cizí laboratoři v areálu Mikrobiologického ústavu Akademie věd. Údajně manipuloval se vzorky, které měly nezávisle ověřit jeho dřívější pokusy, na nichž spolupracoval s britskou kolegyní. Ta se později od práce distancovala. Bezouška tvrdí, že jen kontroloval postup kolegů.



Profesor Karel Bezouška | foto: Přírodovědecká fakulta UK

Vzorky měly vyvrátit či naopak potvrdit pochybnosti nad staršími Bezouškovými pokusy. Kvůli podezření, že u své dřívější [práce](#) podváděl, už

Reklama

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## Research misconduct in plant science: infectious and toxic

Leonid Schneider,  
Independent science journalist

[www.forbetterscience.com](http://www.forbetterscience.com)

[leonid.schneider@gmail.com](mailto:leonid.schneider@gmail.com)  
Twitter: @schneiderleonid

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## 1.4. Ethical rules for scientific work

[Retraction watch](#) and [retraction watch database](#)

**Our database has just reached a big milestone: 20,000 retractions. Will you help us with the next 20,000?**



via [Wikimedia](#)

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PubPeer Blog (2018)

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**36 minutes** | **Modulation of Pulmonary Vascular Remodeling in Hypoxia: Role of 15-LOX-2/15-HETE-MAPKs Pathway** | **Author response**





# 1. Basics of research work

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## 1.5. Funding scientific research

Financial resources      - public (governmental)  
   - private

Ways to fund research   - direct institutional funding  
   - funding of individual researchers

Ideally, grants, institutional support and resources from applied research, spin-off companies - all of these should be combined.

# 1. Basics of research work

## 1.5. Funding scientific research

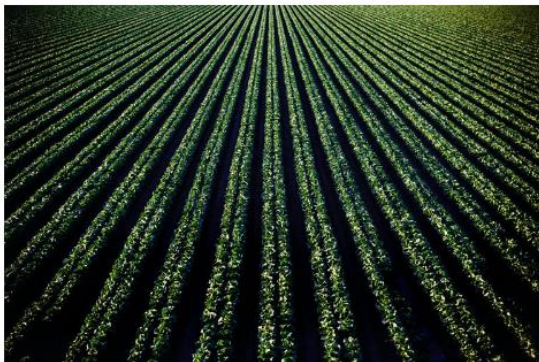
**Technology transfer** - the basic research institution could be financially supported by the licences, the patents and the creation of spin-off companies.

Translational Research - PSB VIB, Belgium

Technology transfer - MPI Innovation portal, Germany

### TRANSLATIONAL RESEARCH

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In order to maximize the societal impact of research conducted at PSB, we are dedicated to proactively translating basic scientific breakthroughs into tangible value. This practical approach is seamlessly integrated into our fundamental research inquiries and is furthered through collaborative partnerships with industry, as well as through licensing agreements and the establishment of spinoff ventures. Over the years, the pioneering research at PSB has led to the successful launch of five spinoff companies: DevGen, CropDesign, Biotalys, Apha Bio, and Protealis, with a sixth venture currently in the evaluation phase.



The procurement of a greenhouse complex featuring a state-of-the-art automated phenotyping platform for in-depth analysis of agronomic parameters, paired with a robotic precision sprayer designed for mimicking field foliar applications, enables us to effectively elevate research outputs to a larger scale across various crops and applications. Learn more about our capabilities at: <https://agro-incubator.sites.vib.be/en>

#### POPULAR TAGS

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  - Climate Change
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  - Plant - environment interaction
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Max Planck Innovation is responsible for technology transfer from the research institutes of the Max Planck Society.

The Max Planck Society (MPG) operates as Germany's most successful organization in basic research and is worldrenowned for its cutting-edge research. In many cases this cutting-edge research also forms the basis for innovative products and services that are implemented through licensing and spin-off companies.

Thus we perform an important task: the transfer of basic research results into products, which contribute to the economic and social progress.

### VIB.BE - Technology transfer



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## 1.5. Funding scientific research

### Technology transfer in the Czech Republic

#### Technology transfer - MPI Innovation portal, Germany

#### Transfer portal CAS

**TRANSFER PORTAL CAS**  
Connecting business with science

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Enter technology and equipment database

#### CETAV

We are Transfer Center CAS (CETAV). We are a guide through the labyrinth of transfer pathways from funding to intellectual property management to marketing and communication of scientific discoveries. We are intermediaries and partners, whose aim is to connect our scientific institutions with the business scene.

[More details](#)

 Transfer plan	 Transfer financing	 Intellectual property management	 Establishing a spin-off
 Cooperation with industry	 Professional development	 Services for the transfer community	 Communication of scientific discoveries

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## 1.5. Funding scientific research

### Grant projects:

**Student, doctoral, starting or junior research projects** - for one to three years, young student or freshly graduated scientists

- **Standard research projects** - the most frequent form, three to five years.
- **Specialized projects** - travel or publication expenses
- **Integration projects** - interconnection of several research groups, at least for five years. Overlap with the classical research projects.

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## 1.5. Funding scientific research

### Grant agencies:

- **Local (internal) Grant Agency** - serves as a money-distributing organization within a specific institution
- The grant agency of the Charles University (GAUK), <https://www.cuni.cz/UKEN-753.html>, students and employees are eligible to apply
  
- **Grant agency affiliated to ministry (government)** - support of science and research in specific areas, e.g. education, medicine, agriculture, culture, etc.
- Ministry of Education, Youth and Sports  
<http://www.msmt.cz/vyzkum/pro-odborniky> in Czech,  
<http://www.msmt.cz/research-and-development-1> in English  
Supports mainly large, collaborative projects

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## 1.5. Funding scientific research

- **National Grant Agencies** - independent agency supported directly from the budget (separate chapter), all research areas are covered
  - [The Czech Science Foundation](#) - in all research areas, it supports research projects submitted by individual researchers
  - National Science Foundation (NSF; <http://www.nsf.gov>)  
the largest and best-organized grant agency in the USA
- **International Grant Agency**
  - founded in the frame EU convergence in the area of scientific research
  - CORDIS (Community research and development Information Service; <http://cordis.europa.eu/>)
  - European research council (ERC), <http://erc.europa.eu>), supports individual scientists all around EU

# 1.6 Writing scientific projects and grant proposals

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Consider the type of the project that is most suitable at the moment and choose the grant agency accordingly

Constitute a functional team - project feasibility is guaranteed by the research institution

Strictly keep formal requisites - project proposals are often eliminated before scientific evaluation, just because of formal defects

- proposal text is similar to scientific paper, it contains expected results, the judgment of possible practical applications and financial demands

Example of the scientific proposal [here](#)

Evaluation of the proposal - members of expert panels select several external reviewers according to the topic of the proposal. These reviewers are always anonymous.

- it takes roughly half to one year to evaluate the project proposal

# 1.6 Writing scientific projects and grant proposals

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Successful proposals are granted, financially supported, applicants turn to be „**principal investigators**“ and their research institutions are typically „**beneficiaries**“.

Reporting periods are pretty variable, from one month to several years

The outcomes of the particular project are **scientific papers or patents**

- grant agencies control **the publication** of results of the principal investigator
- in case of **bad outcome** (no papers, no patents), the principal investigator has problems in any future calls
- In Czechia, scientific projects are **all listed** at the pages of Research and Development Council (<https://vyzkum.gov.cz/FrontClanek.aspx?idsekce=633>)