**Title of project:**

**Applicants:**

(Name, contact data)

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**Abstract**

Short summary of the proposal – what is the question addressed by the project, why is this question interesting or important, what is the central strategy of the project, what can be done in the future with the outcome of the project. In the abstracts normally no references are given.

Maximally half a page

Plant morphogenesis depends on cell polarity, which in turn is linked with auxin transport. In the proposed project we want to understand the role of the actin-binding protein CLIP6 for…

**Scientific background and state of the art:**

Describe briefly what is known about the topic. This should include some (try to be selective – 5-10 quotations are enough) of the relevant publications (you have to do bibliography for this!). One page is enough.

Cell polarity in plants has been shown to depend on the polar transport of auxin (for review see Friml et al. 2013). Since auxin can permeate into the cells non-directionally through an ion trap mechanism (Rubery and Sheldrake 1973), the directionality of auxin is caused by directional efflux through asymmetrically localized efflux carriers…. Blablabla …..These findings suggest that the actin-binding protein CLIP6 plays a central role for the polarity of plant cells.

**Scope of the study and objectives:**

Describe your research question and break down this question into sub-points (objectives) that will be addressed in your project. It is always good to formulate a working hypothesis. Around 0.5 pages.

In the current project we want to test the hypothesis that the CLIP6 gene is activated dependent on the local level of auxin and then causes a bundling of actin that will arrest the transport of the auxin-efflux carrier PIN1 to the cell pole and thus interrupt polar auxin transport. From this hypothesis, the following objectives are defined:

1. Can we show that auxin activates the CLIP6 gene?
2. Can we show that CLIP6 causes bundling of actin?....

**Preliminary work:**

Describe what preparations have already been done including tools that are important or helpful (this can include also unpublished work). Around 1 page

CLIP6 has been cloned from tobacco BY-2 and inserted into the GATEWAY vector system. This allows to generate fusions with GFP and RFP in short time. Transformation of BY-2 has been established in the lab….

**Work plan:**

This is the central part, you have to explain, how you address the objectives, what strategy you use, what risks or problems exist and what you will do, if something does not work as planned (so called fallback strategy). Also so called milestones or deliverables have to be defined that allow for the funding organisation to decide, whether your work was successful or not. This will also include a time plan. In case of more complex projects, it is also good to have a visualisation (so called GANTT chart). Around 1-2 pages

Based on the objectives of this study, the following workpackages can be defined.

Workpackage 1: Can auxin activate the CLIP6 gene?

This will be addressed by a qPCR-based time course study. BY-2 cells will be treated with 2 µM of the natural auxin indole-acetic acid and aliquots will be harvested at 15, 30, 60, and 120 min after addition of the hormone (an untreated culture will be used as negative control). High-quality RNA will be purified by the InnuPrep kit…. Blablabla

Pitfalls and fallback strategy: Since no completed genome project is available for tobacco BY-2, it is not clear, which other members of the CLIP family are present. It is therefore possible that the qPCR measures not specifically CLIP6, but also other members of the family. Therefore, the primer pairs are used for synthetic PCR, and the amplificates are sequenced to see, whether they are composed of more than one species of CLIP.

Time: Since at least three biological replicas are required, this workpackage is estimated to require four weeks.

Milestone: auxin regulation and time course of CLIP6 transcription

Here an example for a GANTT chart

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task No.** | **Title of Task/Sub-task** | **Start Date** | **End Date** | **Duration (Months)** |
| M 1 | M 2 | M 3 | M 4 | M 5 | M 6 | M 7 | M 8 | M 9 | M 10 |  |
| **1** | **Physiological framework for cold adaptation and priming****(KIT)** | **04-2016** | **11-2016** | **8** |  |  |  |  |  |  |  |  |  |  | Protocol for cold adaptation and priming (precondition for task 3) |
| **2** | **Selection of wild and cultivated strawberry lines with elevated chilling/freezing tolerance**  | **04-2016** | **11-2016** | **8** |  |  |  |  |  |  |  |  |  |  | Functional proof: chilling tolerant wild and selected cultivated strawberry lines. |

**Planning of resources**

What financial resources are required, what preconditions are available. This should be realistic, which means that you have to inquire, how much the things cost, you are using – you will be astonished… (maximum 1 page)

Personnel: for this project, funds for 1 Ph.D. student (0.5 E13) are required

26 T€ p.a. – for a running time of 6 months: 13000 €

Consumables:

RNA extraction kits (2-3) 1200 €

Taq polymerase (around 200 units) 500 €

Fine chemicals (dNTPs, agarose, CybrSafe) 400 €

……

Equipment:

The lab is equipped for molecular cell biology including high-end microscopy (spinning-disc, 4 epifluorescence microscopes…). A cell culture unit…

**Appendix**

References

**Curricula vitae of applicants**

**Prof. Dr. Peter Nick**

|  |  |
| --- | --- |
| **Personal** | Born October 01, 1962, in Leutkirch, Germany, married, two children (14 and 21 years old) |
| **School Education** |  |
| 09/69 - 07/72  | Elementary school Schloß Zeil/Allgäu |
| 09/72 - 07/81 | Gymnasium Leutkirch/Allgäu |
| **University Education** |  |
| 10/81 - 10/86 | Study of Biology at the University of Freiburg |
| 09/84 – 08/8503/86 – 10/86 | Bachelor Thesis in Botany, University of St. Andrews Scotland“Heterophylly in a *Potamogeton* Species”Diploma Thesis “Photogravitropism in Maize”Ph.D. Fellowship “Studienstiftung des Deutschen Volkes |
| 01/90 | Graduation to Dr.rer.nat. at the University of Freiburg, (Title: " Attempt on Tropism, Polarity and Microtubules ") |
| **Appointments** |  |
| 1990 – 1992 | Postdoc at Frontier Research-Program, Wako-shi, Japan |
| 1992 - 1994 | Postdoc at Institut de Biologie Moleculaire des Plantes, Strasbourg |
| 1994 - 1996 | Postdoc at the University of Freiburg |
| 07/1996 | Habilitation in Botany and Plant Physiology |
| 1996 - 199709/1997 12/1999 – 09/20032003200310/03-12/0410/04-09/1412/04Since 01/05 | Research Assistant at the Institute for Biology II, Freiburg"Oberassistent" at the Institute for Biology II, Freiburg (C2)Junior Group Leader „Dynamics of the plant cytoskeleton“ Offer C4 position (director), University Frankfurt, declinedOffer C4 position, TU Darmstadt, declinedAssociate Professor (C3) at the University of KarlsruheDean of Study Affairs and Member of Faculty Directorium Offer Full Professor position at the University of Salzburg, declinedFull Professor (W3) at the University of Karlsruhe |
| **Honors and Support** |  |
| 11/86 – 01/90 | Ph.D. fellowship "Studienstiftung des Deutschen Volkes" |
| 19901990 - 1992 | Goedeke Research Award for best Ph.D. thesisFellowship Science and Technology Agency, Japan |
| 1992 - 1994 | Fellowship Human Frontier Science Organisation |
| 1994 - 19961999 – 200320072015 | Habilitation Fellowship by the Deutsche ForschungsgemeinschaftJunior Research Group of the Volkswagen-FoundationTeaching Award of the University of KarlsruheTeaching Award of the University of Karlsruhe |
| **Editorial Activities**10/03 – 10/11 -  | Editor-in-Chief of PROTOPLASMA (Cell Biology, Springer)Series Editor of Plant Cell Monographs (Springer) |
| **Theses supervised** | Diploma/Master (38), Master currently (2); Ph.D. (43), currently (18) |