ANR Défis DIAMOND

Déconvolution d'**I**mages **A**ugmentée en **M**icroscopie **O**ptique **N** **D**imensions

Deconvolution of Augmented Images in Multi-Dimensional Optical Microscopy

- ANR DIAMOND Partners:
  - **INRIA (INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET EN AUTOMATIQUE)**
  - **IP (INSTITUT PASTEUR)**
  - **UHA (UNIVERSITE DE HAUTE-ALSACE)**
  - **UPE (UNIVERSITE PARIS-EST)**
  - **INRA (INSTITUT NATIONAL DE RECHERCHE AGRONOMIQUE)**

- The Consortium agreement was signed by all the partners in Oct, 19, 2010.
- http://www-syscom.univ-mlv.fr/ANRDIAMOND/

Goal of the ANR DIAMOND project

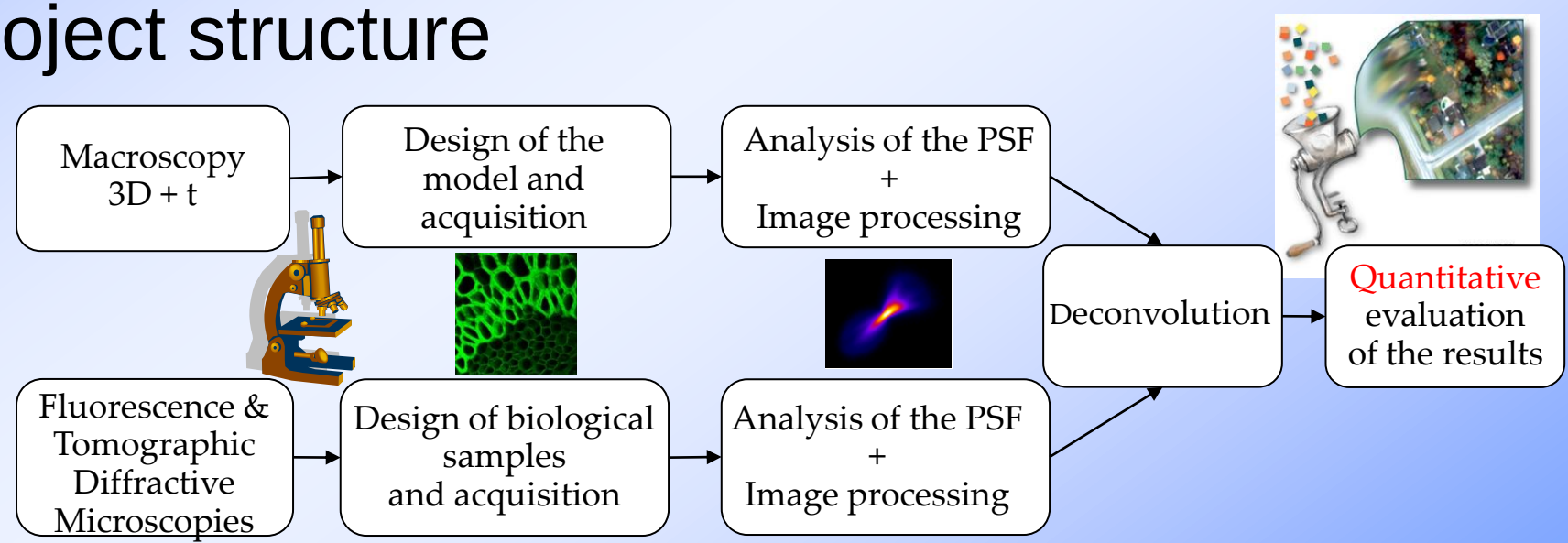
Context:

- Optical imagery techniques for biological samples are in progress.
- Collaboration between biologists, instrumentalists, data processing specialists and mathematicians around optical microscopy instruments in order to get high image quality.

Goal of the ANR project

Financial supports & Labeled by French clusters

Project structure



Goal of the ANR DIAMOND project

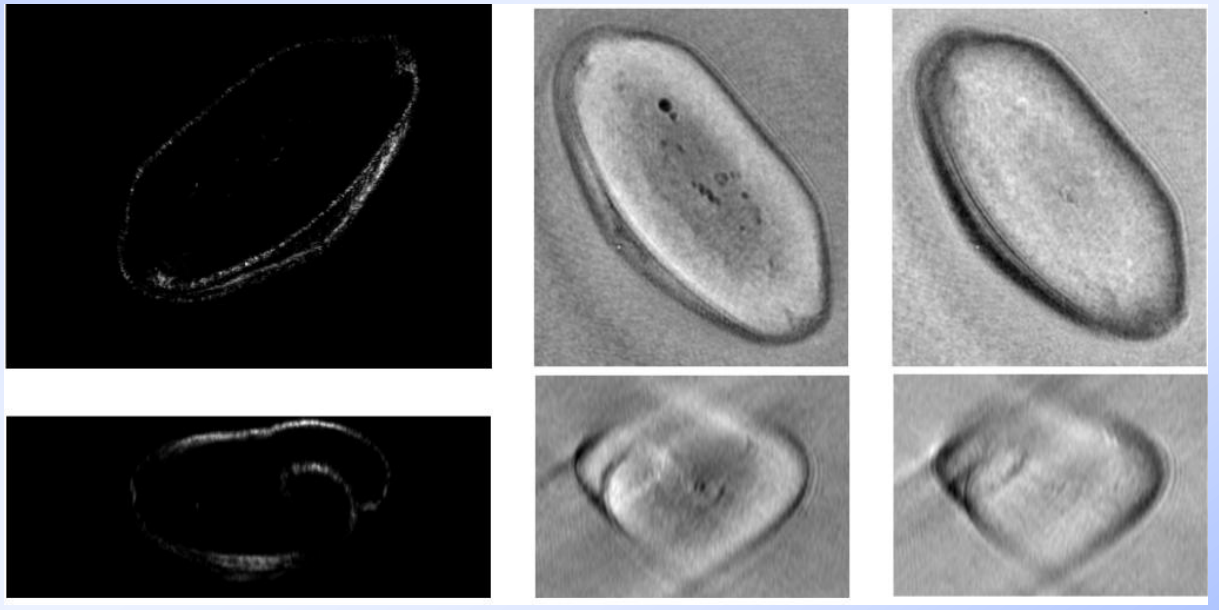
Different tasks:

- **Task 0**: ANR MANAGEMENT (coordinator: INRIA, participants: all)
- **Task 1**: PSF MODELING IN MACROSCOPY(coordinator: IP, participant: UHA)
- **Task 2**: PSF MODELING IN MICROSCOPY + TOMOGRAPHY (coordinator: UHA, participant: IP)
- **Task 3**: BLIND DECONVOLUTION IN MACROSCOPY (coordinator: INRIA, participants: IP, UPE, UHA)
- **Task 4**: BLIND DECONVOLUTION IN MICROSCOPY + TOMOGRAPHY(coordinator: INRIA, participants: UPE, UHA)
- **Task 5**: DECONVOLUTION IN MACROSCOPY (coordinator: UPE, participants: INRIA, UHA)
- **Task 6**: DECONVOLUTION IN MICROSCOPY + TOMOGRAPHY (coordinator: UHA, participants: UPE, INRIA)
- **Task 7**: RESULTS ANALYSIS (coordinators: INRA, UHA, participant: IP)

Collaborations

Exchanged data:

- from UHA to INRIA



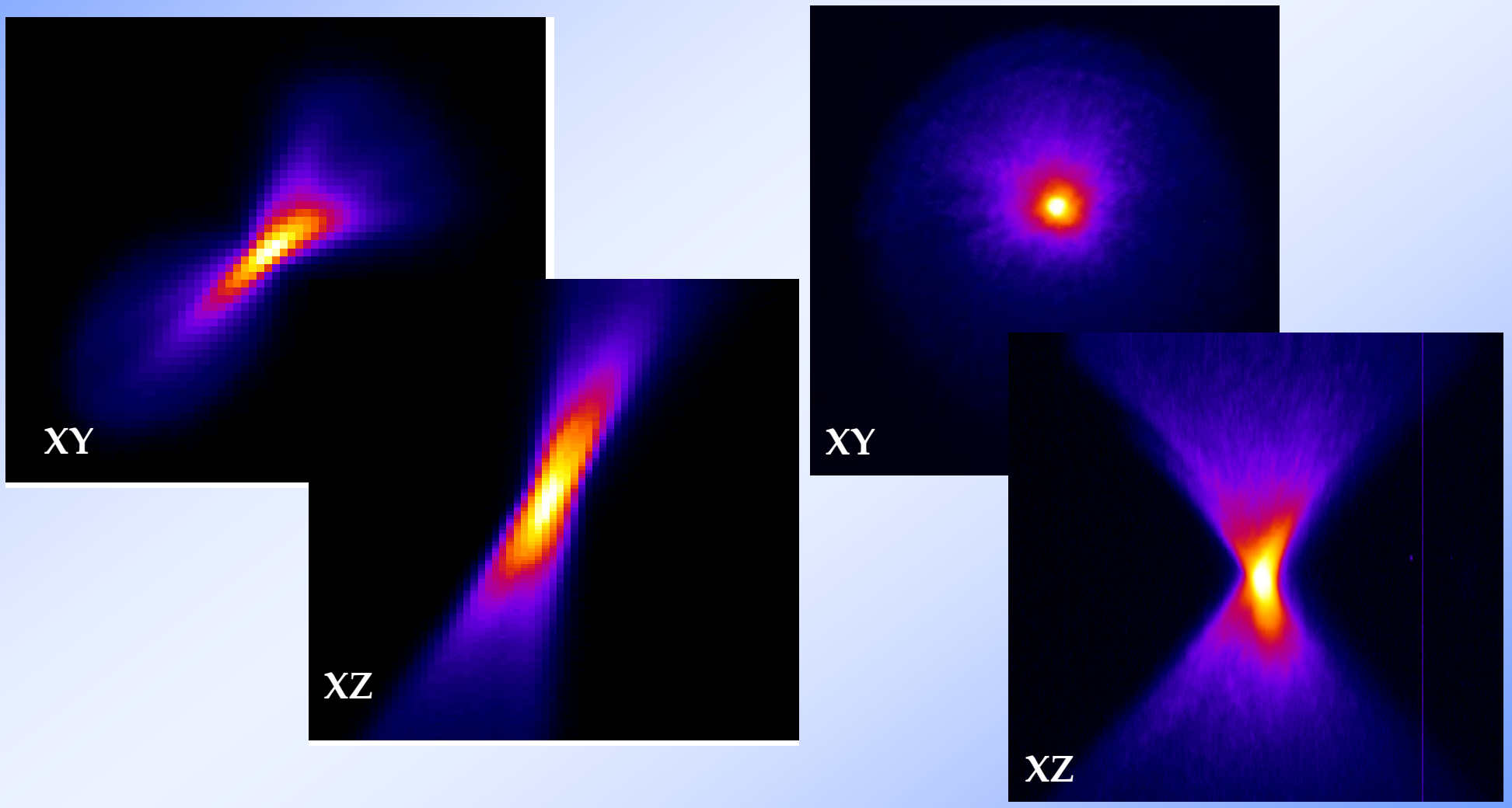
CLSM data

Real part of the TDM data

Imaginary part of the TDM data

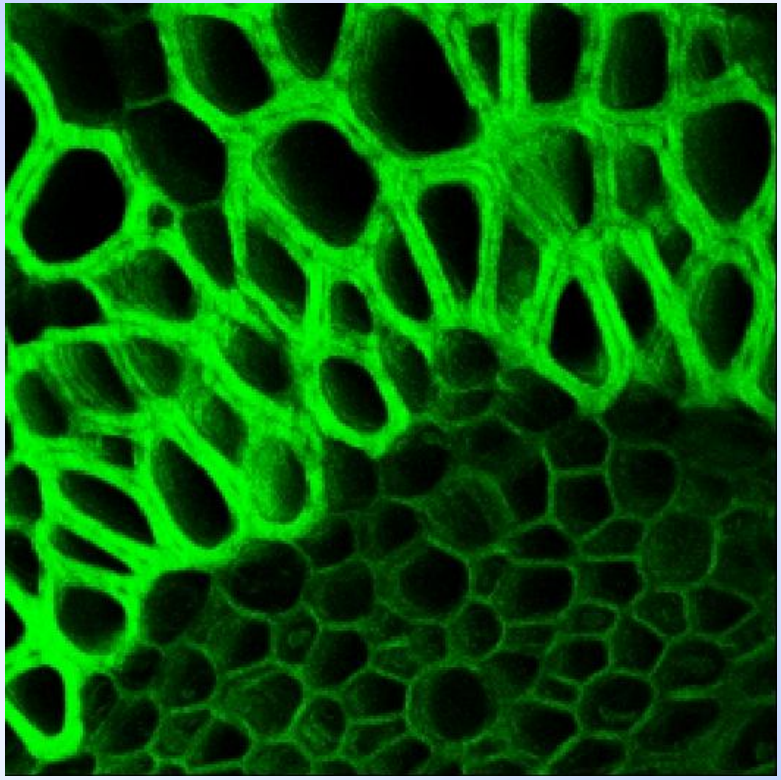
Collaborations

- From IP to UPE and UHA



Collaborations

- From INRA to UPE, UHA and Pasteur:



- From INRA to everybody: microscopy images
  http://www-syscom.univ-mlv.fr/ANRDIAMOND/images.html

Collaborations

3 joint publications in international conferences:

- P. Pankajakshan, A. Dieterlen, G. Engler, Z. Kam, L. Blanc-Féraud, J. Zerubia and J.-C. Olivo-Marin, Point-spread function model for fluorescence macroscopy imaging, Proc. of Asilomar Conference on Signals, Systems and Computers, Monterey ,Nov. 2010.
- P. Pankajakshan, A. Dieterlen, G. Engler, Z. Kam, L. Blanc-Féraud, J. Zerubia and J.-C. Olivo-Marin. "Wavefront sensing for aberration modeling in fluorescence MACROscopy", Proc. IEEE International Symposium on Biomedical Imaging (ISBI), Apr. 2011.
- E. Maalouf, P. Pankajakshan, B. Colicchio, A. Dieterlen, J.-C. Olivo-Marin, G. Engler. “Space variant deconvolution applied to 3D Fluorescence Micro&Macro-scopy”. The Tenth International Conference on Correlation Optics, Chernivtsi, Ukraine, Sep. 12-16 2011.

Collaborations

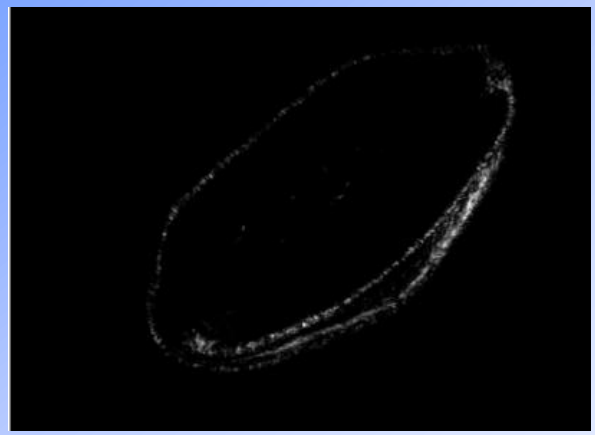
One joint book chapter:

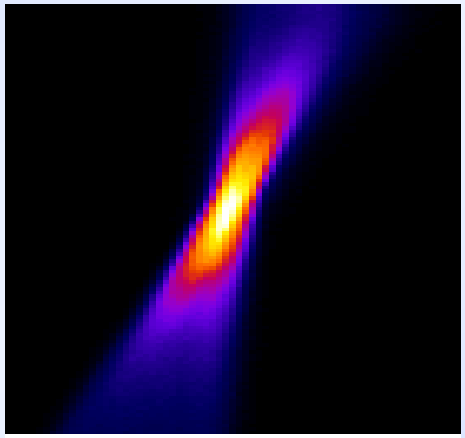
- P. Pankajakshan , G. Engler, L. Blanc-Féraud and J. Zerubia, Deconvolution and denoising for confocal microscopy, in ‘Modeling in Computational Biology and Biomedicine: current trends’ (Ed. F.Cazals and P. Kornprobst) to be published in LN in Mathematical and Computational Biology by Springer, 2012
- Many other publications by single partners:
- http://www-syscom.univ-mlv.fr/ANRDIAMOND/publications.html

Important informations

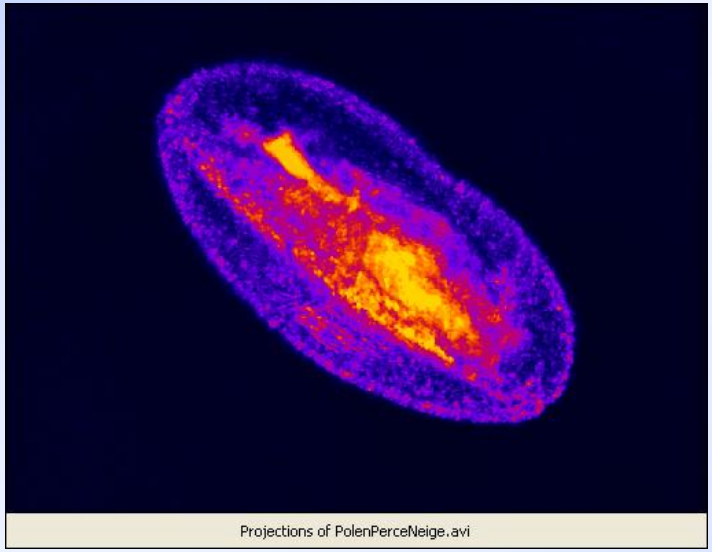
- Change of the ANR DIAMOND PI starting from Jan. 1, 2012:
  - L. Blanc-Féraud (I3S/INRIA) will replace J. Zerubia (INRIA).
  - Decision taken by G. Giraudon, Director of the Center of INRIA Sophia Antipolis Méditerranée.

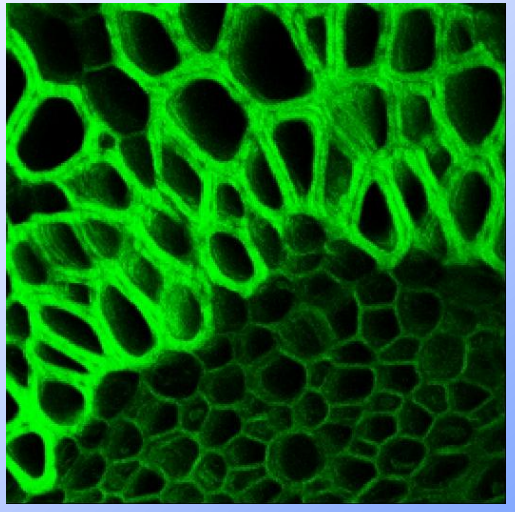
- An extension of 6 months will be asked in 2012 by the ANR DIAMOND.





Thank you for your attention





Consortium meetings

- http://www-syscom.univ-mlv.fr/ANRDIAMOND/agenda.html
- 2 meetings in 2009
- 12 meetings in 2010
- 16 meetings from January to November 2011
- Important dates (meetings with all the partners)
  - Dec. 18, 2009
  - Dec. 8-9, 2010
  - Jun. 21-22, 2011
  - Sep. 15, 2011
  - Nov. 29-30, 2011