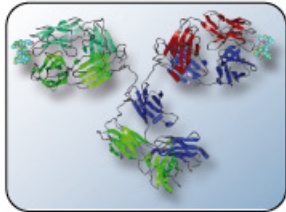




## **PX'Therapeutics : the partner for early stage biotherapeutics development**

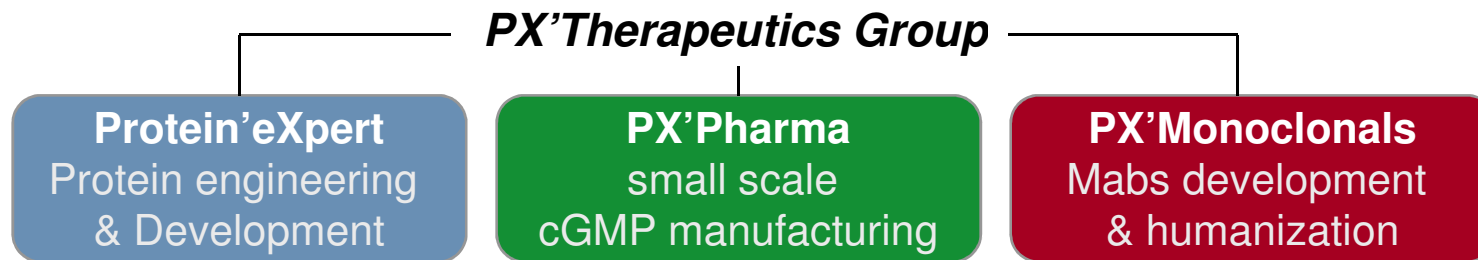


**Biotuesday, May 5 2009**



*Christelle Dagoneau, PhD  
Business Development Director*

- Protein'eXpert incorporated in 2000 by Tristan Rousselle (CEO) and Nicolas Mouz (CSO)
- Creation of subsidiaries : PX'Pharma in 2004 / PX'Monoclonals in 2007
- Protein'eXpert became PX'Therapeutics in Sept. 2008
- Contract Research & Manufacturing Services model



- Extensive involvement in R&D collaborative programmes
- Skilled 50 people team
- ISO 9000:2000 certification
- Located in Grenoble and Lyon, France



- Majority of the capital owned by the founders  
→ *Banque de Vizille as a main shareholder since 2008*
- Growth and internal R&D mainly self-financed by the service-based activities  
→ *More than 500K€ investment/year spent on R&D (completed by funding bodies)*
- 2003: 1,3 M€ raised for the set up of PX'Pharma manufacturing unit  
→ *Unique French site for cGMP production in bacteria & yeast*
- 2005-2008: 3 years of extensive growth  
→ *Team size x 2*  
→ *Move to Minatec Technology Park*
- 2009-2011: new business plan  
→ *to be supported by a 2<sup>nd</sup> fund raising in 2009*



• **2009-2011: new business plan / 4 axes**



Increase of sales activities / strengthening of our competitive position  
 Set up of a new cGMP manufacturing unit (mammalian cell lines)



Development of US-based turnover  
 Partnerships with Althea Technologies (San Diego) signed in 2008  
 Opening of a commercial office in Cambridge / Boston



Development of Thematic Services  
 High value service programmes based on R&D results



Co-Development projects  
 High value partnerships



**Microtest Matrices Ltd**



*FP6 project*  
 2003-2006 : diagnostics  
 (pulmonary diseases)



**European programme led by Sanofi-Pasteur**

*2008-2010*  
*HIV vaccine*  
*Antigen engineering & cGMP manufacturing*



**BD, Institut Pasteur de Lille, CEA-LETI**

*2008-2010*  
*Tuberculosis*  
*(diagnostics & vaccine applications)*



**Alizé Pharma**

*2008-2010*  
*Therapeutic enzyme for oncology therapy*



**Institut Necker**

*2008-2010*  
*Cell therapy tools development*

 **Protein'eXpert**

Gene Optimization  
Molecular biology  
Protein Engineering  
Feasibility Study  
Fermentation  
Stable cell line development  
Process development  
(USP/DSP)

 **PX' Monoclonals**

Mice immunization  
(including DNA immunization  
or subtractive approach)  
Generation of hybridomas  
Production of MAbs  
  
Chimerization / humanization  
(molecular engineering  
and humanized  
mice technologies)

 **PX' Pharma**

Cell banking  
Pre-clinical manufacturing  
cGMP clinical manufacturing  
Analytical development  
Regulatory & QA support  
Clinical batch release

**Small scale**

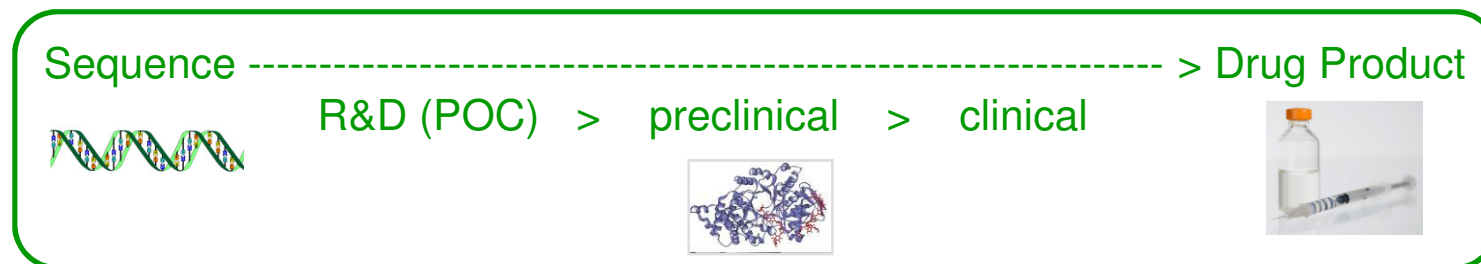
*Bacterial (E. coli, L.lactis),  
yeast (P.pastoris, S.cerevisiae, Y. lipolytica),  
Baculovirus/insect cells,  
Mammalian cells (HEK, CHO, hybridomas)*

*Systems: Bacterial & Yeast only  
CHO to come*

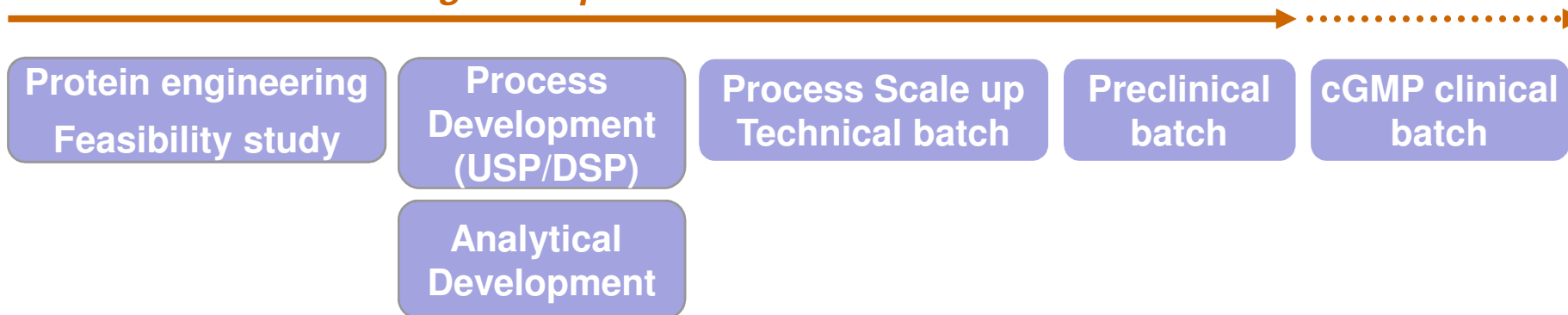
*From Discovery & Development -----> to cGMP Biomanufacturing*

- Organization and skills adapted to difficult / complex projects
- Strong knowledge in structural / molecular / cellular biology and biochemistry
- Specific expertise in protein engineering
- Open technology platform (no proprietary systems)
- Know-how & experience in process development and cGMP manufacturing
- In depth regulatory support
  - experience with French (AFSSAPS), European (EMA) and US/FDA authorities

→ Capability to support project's development from early stage research up to clinical batches production for PI/II clinical trials



*From gene to preclinical batch in <12 months*



*A research-based & « issue solving » approach all along the development of the project*

*And more :*

- Large scale cGMP manufacturing for Phases II, III and market
- Fill & Finish
- US facilities



## **Specific Know-how for Monoclonal Antibodies Development**

- Highly affinate hybridoma development (murine antibodies)
- Tailored immunogen formulation & immunization strategies to generate mAb directed against weakly antigenic and/or rare epitopes
  - *from DNA, transfected cells, purified proteins/peptides*
- Medium scale production/ purification & Mab characterization

**From 20 to 24 weeks for hybridoma generation & murine mAb production**

- Chimerization and humanization services based on IP-free approach and proposed on the fee-for-service basis
  - *molecular engineering strategies*
  - *development of humanized mice (in collaboration with Genoway)*
  - *immortalization of human B lymphocytes (in collaboration with INSERM)*



Type of projects	Project specificities
<b>Cristallography</b>	Hight-throughput production of various bacterial, fungal & viral targets at cristallography grade for X-Ray structure determination. Various clients & partners: Galderma, Pfizer, IGS, IBS, CRSSA, etc.
<b>Diagnostic</b>	Development and production of antigens to be used in protein arrays. Pathologies addressed : pulmonary infections, malaria, avian flu. Partner: MtM (FP6/FP7) Proteins for diagnostics kits, various pathology adressed. Client: Biomerieux, etc.
<b>Technology development</b>	Development and characterization of a new yeast expression system ( <i>Yarrowia lipolytica</i> ) used to manufacture Phase I clinical batch of a therapeutic enzyme targeting cystic fibrosis. Client project.
	Development of strategies to humanize monoclonal antibodies. 1/ molecular engineering/modelling approach; 2/ generation of humanized mice; 3/ production of fully human MAbs from human B lymphocytes isolated from seroconverted patients. Partners: Genoway, Inserm (OSEO)
<b>Cellular immunotherapy</b>	Development of cGMP MHC/Tetramers and cell sorting procedures using for GVHD prevention. Partner : Necker Hospital
<b>Therapeutic</b>	Development of various therapeutic proteins adressing pathologies such as prostate cancer (client: MedDiscovery), leukemia, MSRv, eye disease, liver disease, etc.
<b>Allergy</b>	Development of dust mites recombinant allergens to be used for desensitization. Client: Stallergènes.
	Development of recombinant vaccine to prevent against a specific food allergy. Confidential US client.
<b>Human Vaccine</b>	HIV related antigen engineering and GMP Production. Partner: Sanofi-Pasteur (FP7).
	HIV vaccine development. GP41 protein engineering. Client : Mymetics
<b>Veterinary Vaccine</b>	Development of recombinant vaccine against cat AIDS. Partner : Merial

## TRACK RECORDS

8 years of accumulated expertise / 500 protein related projects performed (R&D & GMP grade)

Clinical batches already released in Europe & USA

140 clients (30% international) / 9 collaborative R&D programmes (3 years duration)

### BIG PHARMA



### ACADEMICS



### NETWORKS



### BIOTECHS

(Non confidential clients)



### SCIENTIFIC PARTNERS

