TARGETING THE IMMUNE SYSTEM TO ELIMINATE VIRAL DISEASE
ABIVAX at a glance

• Leveraging three immuno-virology platforms: Antiviral, Immune Enhancer and Polyclonal antibodies
  ➢ Drug-candidates against multiple viral infections e.g. HIV, Chikungunya, Dengue, Ebola
  ➢ Immune enhancer for infectious disease and oncology

• Advancing first “functional cure” for HIV infection
  ➢ Reported positive Phase IIa ABX464 monotherapy data Q1 2016
  ➢ Second Phase IIa ABX464 combination study with anti-retroviral therapy to report end 2016

• Raised €57.7 million in successful IPO on EURONEXT Paris in June 2015

• Market Cap ~$87M (as of 15 Sept 2016)

• ABVX.PA shares outstanding: 9,696,889

• Headquarters in Paris, France
Investment highlights

• Addressing billion dollar markets with novel therapeutic approaches

• Strong, diversified product portfolio based on three technology platforms
  
  ABX464 – Phase II (antiviral for the treatment of HIV)
  
  • Demonstrated safety and antiviral-activity in Phase IIa study in HIV patients
  
  • Currently in second Phase IIa trial to confirm long-lasting effect; readout expected at Q4 2016

  ABX196 – Completed Phase 1 study in prophylactic hepatitis B vaccination (Immune Enhancer)
  
  • Immuno-oncology
  
  • Immuno-virology

  ABX544 – In lead optimization (polyclonal antibodies for the treatment of Ebola)
  
  • Expect to begin preclinical toxicology in Q2 2017

  ABX311 – In lead optimization (anti-viral for treatment of Chikungunya)
  
  • Expect to begin preclinical development in Q4 2016

• Well-funded to key milestones through at least the end of 2017

• Experienced management team with proven track record
Highly experienced senior leadership team

Prof. Hartmut Ehrlich, M.D.
Chief Executive Officer

Prof. Jamal Tazi Ph.D.
CNRS Director & Founder of antiviral platform

Pierre Courteille
Chief Commercial Officer & VP, BD

Bernard Fanget
VP, Manufacturing

Ex-Head of Global R&D Baxter

Alain Chevallier
Chief Financial Officer

Karl Birthistle, M.D.
VP, Clinical & Regulatory Affairs

Didier Scherrer, Ph.D.
VP, R&D

Jean-Marc Steens, M.D.
Chief Medical Officer

Ex-CFO Sanofi-Aventis France

Competencies from discovery to global commercialization
ABIVAX is built on three immuno-antiviral platforms

**Anti-viral**
- **Platform:** Proprietary chemical library (small molecules) and innovative approach targeting viral RNA biogenesis
- Validated by multiple first-in-class drug candidates under development

  - **ABX464:** Phase II clinicals in HIV
  - **ABX311:** Lead for Chikungunya

**Immune Enhancer**
- **Platform:** iNKT agonists licensed from Scripps, University of California, Brigham-Young Univ.
- Immune enhancing effect validated in preclinical studies and Phase I clinical trial

  - **ABX196:** Immune enhancer for severe viral infections (e.g. Influenza, chronic hepatitis B) and oncology (e.g. melanoma)

**Polyclonal antibodies**
- **Platform:** Induction of polyclonal antibodies from animal sera
- Generated first-in-class polyclonal for treatment and prophylaxis of Ebola

  - **ABX544:** Novel approach to Ebola
A strong & diversified development portfolio

HIV
- Anti-viral drug
- ABX464 monotherapy: positive data reported Q1 16
- ABX464 combination study: will report data Q4 16

Viral infections, cancer
- Immune Enhancer
- ABX196

Ebola
- Polyclonal antibodies
- ABX544

Chikungunya
- Anti-viral drug
- ABX311

Dengue
- Anti-viral drug
- Discovery

Undisclosed Virus
- Anti-viral drug
- Discovery
ABIVAX’S ANTI-VIRAL PLATFORM TARGETS RNA BINDING PROTEINS...

- RNA Binding Proteins (RBP) can bind to RNA to form Ribonucleoprotein (RNP)
- RNPs are required for RNA processing, e.g.:
  - Alternative splicing
  - Export to cytoplasm
  - Translation
- RNPs are required for viral replication
- RNPs also play a role in chronic inflammation*
- ABIVAX owns a chemical library of >1,000 compounds targeting viral RNAs


...to block the assembly of viral RNPs for efficient inhibition of viral replication in human cells
HIV – a chronic disease in need of a true cure

Unmet medical need - 2015

# of patients in developed regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Patients not treated</th>
<th>Patients treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>62%</td>
<td>1.4</td>
</tr>
<tr>
<td>Europe</td>
<td>37%</td>
<td>1.0</td>
</tr>
</tbody>
</table>

2.4 M

HIV drug global market - 2015 : $22,5 B

Total cost / year ($B)

| Region | 6,8 | 12,4 |

Shortcomings of current therapies:

• Need for life-long treatment
• Daily dosing
• Cocktails of multiple drugs

• Substantial side effects
• Drug change needed as resistance emerges
• High cost per patient

Source: UN AIDS – 2015, Decision Ressources - 2015, Company estimates
ABX464: A potential functional cure for HIV infection

- Orally administered small molecule
- Unique mechanism of action - inhibits the biogenesis of viral RNA required for the replication of HIV
- ABIVAX proprietary compound covered by IP protection until 2030
- Partnering with large pharma/biotech intended for Ph III and commercialization

Clinical and preclinical data suggest that ABX464:
- Is safe and well-tolerated
- Shows antiviral activity in patients
- Does not lead to HIV mutants that are resistant to treatment
- Could induce long term control of viral load (lasting remission or functional cure)
ABX464: mode of action for inhibition of viral replication

Viral unspliced mRNA biogenesis in HIV infected cells

Rev prevents pre-mRNA splicing

Viral Structural proteins

REPLICATION

Effect of ABX464 on unspliced mRNA biogenesis in HIV infected cells

Presence of Rev and ABX464: Splicing of viral mRNA

Aberrant viral mRNAs

NO REPLICATION

ABX464 inhibits REV activity: Modulates viral RNA splicing and blocks export of unspliced RNA
ABX464 induces viral load reduction

Preclinical efficacy data in a transgenic (humanized) mouse model

HAART – Triple therapy

ABX464 - Monotherapy

ABX464 induces significant viral load reduction

*Tcampos et al., Retrovirology 2015, 12:30*
ABX464 clearly differentiated from existing HIV therapies

ABX464 induces long-lasting reduction of viral load

ABX464 : Changing the balance between HIV and the immune system

*Campos et al., Retrovirology 12:30 (2015)*
MoA for long-acting effect: Reversal of inflammation?

‘Elite controller’ patients have reduced inflammation compared to ART controlled HIV patients*

• By reducing inflammation, ABX464 may induce a long-lasting control of the infection:
  • Expression of IL-22 (anti-inflammatory cytokine) is about 50 fold increased by ABX464 in activated macrophages
  • Expression of miR124 (microRNA with anti-inflammatory properties) is about 10 fold increased by ABX464 in PBMC, whether infected or not

* Okulicz et al, J Infect Dis 200, 1714-1723 (2009)
Long-lasting effect of ABX464 in a colitis model

In the DSS induced colitis model, ABX464 protects mice from inflammatory response:
- Prevention of weight loss and colon size
- Reduced macrophage recruitment into the intestine
- Decreased levels of pro-inflammatory cytokines
- Long-lasting effect (like in the HIV humanized mouse model)

ABX464 may reverse the proinflammatory phenotype induced by HIB infection
## HIV drug resistance in vitro*
(6-month follow-up)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Time to HIV resistance (weeks)</th>
<th>HIV Mutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamivudine</td>
<td>4</td>
<td>M184I/V</td>
</tr>
<tr>
<td>Tenofovir</td>
<td>12</td>
<td>K65R</td>
</tr>
<tr>
<td>Nevirapine</td>
<td>3</td>
<td>K103N, Y181C</td>
</tr>
<tr>
<td>Efavirenz</td>
<td>5</td>
<td>K103N, Y181C</td>
</tr>
<tr>
<td>ABX464</td>
<td>No HIV resistance</td>
<td>-</td>
</tr>
</tbody>
</table>

*Campos et al., Retrovirology 2015, 12:30
ABX464: Clinical development towards global approval

- Phase Ia
- Phase Ib
- Phase Ila
- 2nd Phase Ila
- Phase IIb
- Phase III

2014 2015 2016 2017 ...
ABX464 first Phase IIa study: Good safety and antiviral activity

- 10 successive cohorts of 8 HIV+ but treatment naïve patients
- Ascending oral doses (25–150 mg qd) review
- Most common adverse events were headache, nausea, and vomiting (mild to moderate)
- All patients completed treatment per protocol

Number of ABX464-treated patients who achieved a 0.5 log10 reduction in HIV-1 viral load by Day 14:
- 75 mg Group: 1-of-6
- 100 mg Group: 2-of-6
- 150 mg Group: 4-of-6
ABX464 Second phase IIa study: Combination therapy with ART

- Study goal: Confirm long-lasting effect on viral load control in HIV+ patients after treatment interruption with ABX464
- Study sites in Spain, France and Belgium
- Study enrolment began June 2016, N=28
- Top-line results expected by end of 2016

**Study Design**

- **ABX464 or Placebo**
- **Darunavir / Ritonavir or Cobicistat**
- **DRV/RTV or COBI**
- **ARTs**
- **Screening**
- **Baseline / Randomisation**
- **D25 Complete PK**
- **Treatment Interruption**
- **EoS visit**

<table>
<thead>
<tr>
<th>D-21 visit Screening</th>
<th>D0 visit</th>
<th>D7 visit</th>
<th>D14 visit</th>
<th>D21 visit</th>
<th>D25 visit</th>
<th>D28 visit</th>
<th>D29 ARTs interruption</th>
<th>Every week visit</th>
<th>EoS visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>**</td>
<td>*</td>
</tr>
</tbody>
</table>

**Visit Schedule**

- **D-21**
- **D0**
- **D7**
- **D14**
- **D21**
- **D25**
- **D28**
- **D29**
- **Every week**
- **EoS**
ABX464: Next clinical trials

Phase IIb

- Large-scale study (≈200 patients)
  - To start first half 2017
  - Combination with existing treatment
  - Primary objective is to confirm long-lasting effect of treatment in large populations

Phase III

- US / Europe: 2 Phase III trials in parallel
- Standard filings for approval

→ Same protocol EMA/FDA

→ 2019 NDA & MAA submissions
→ 2020 Regulatory Approval
ABX196: Activation of iNKT cells for infectious disease and oncology

- **Glycolipid** derived from alpha-galactosyl-ceramids (α-GalCer) in liposome formulation
- **Novel mode of action**: Enhancing a specific immune response through activation of invariant natural killer T-cells (iNKT)
- Strong, exclusive and worldwide IP
- Well established and defined manufacturing and formulation

### Demonstrated Benefits in Viral Infections

- **Phase I/II clinical study (prophylactic vaccination with HBsAG) demonstrated***:
  - Full agonist activity in all 29 patients after single administration
  - Excellent tolerability at fully immunogenic dose (0.2µg)
  - Only one administration required for full activity
- **Specific long lasting humoral and cellular response against infectious diseases**
- **Protective immune response in several preclinical models**: influenza, hepatitis B, RSV, genital herpes
- **Activity demonstrated in different species** (mouse, monkey and human)

*Efficacy of ABX196, a new NKT in prophylactic human vaccination / Vaccine 2014: 32(46):6138*
ABX196: Demonstrated benefits in immuno-oncology models

1. ABX196 improves the effect of anti-PD1 in mouse melanoma model

![Tumor Growth](image1)  ![Survival](image2)

- Tumor volume (mm³)
- Days post challenge
- Tumor growth
- Percent survival
- Days post challenge

2. ABX196 improves the effect of chemo (doxorubicin) in mouse melanoma model

![Tumor Growth](image3)  ![Survival](image4)

- Tumor volume (mm³)
- Days post challenge
- Percent survival
- Days post challenge

Partnering with large Pharma/Biotech will accelerate development in multiple oncological indications
Ebola: Recurring since 1976, with increasing morbidity and mortality

Source: Center for Disease Control and Prevention
ABX544: A novel approach for the treatment of Ebola

- **Strong medical need:** Product for immediate treatment and prophylaxis during outbreak
- **Classic vaccine will take time for development** of protective immunity
- **Polyclonal antibodies proven to be effective in several infectious diseases** (RSV, CMV)

**Next Milestones:**

- Characterization of polyclonal antibodies in Q4 2016
- Preclinical tox to start in Q2 2017
- Phase I clinical trial to start Q3 2017
Chikungunya: ABX311 in lead optimization stage

Virus
- RNA virus belonging to the alphavirus genus of the Togaviridae family
- Viral infection transmitted to humans by infected mosquitoes (tiger mosquito)

Symptoms
- Fever and joint pain that may last several months and may be crippling

Current treatments
- Symptomatic treatment only; no anti-viral treatment available at present

Products under development
- NIAID vaccine*: Phase I in 2014; Phase II launched in 2015
- No anti-viral currently under development

Epidemiology
- Virus present largely in tropical/subtropical areas

Market
- Up to 1 M cases worldwide/year

Status/Next Milestone:
- ABX311 (lead) to move into preclinical development: Q4, 16

* NIAID: National Institute of Allergy and Infectious Diseases
23 families of patents, including the following 3 broad categories:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Patent Families</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-viral</td>
<td>18</td>
</tr>
<tr>
<td>Immune Enhancer</td>
<td>4</td>
</tr>
<tr>
<td>Polyclonal antibody</td>
<td>1</td>
</tr>
</tbody>
</table>

Over 200 patents delivered

Existing IP Portfolio and constant efforts to protect new discoveries place ABIVAX in a strong competitive position
Strong near-term news flow

**H2 2016**

- **ABX464**
  - Presentation at “AIDS 2016” (Durban, S. Africa)

- **ABIVAX**
  - Inauguration of collaborative lab Montpellier

- **ABX464**
  - Presentation at « HIV drug therapy 2016 » Glasgow, UK

- **Chikungunya**
  - Preclinical studies to begin

- **ABIVAX**
  - Half-year 2016 Results

- **ABIVAX**
  - R&D day Montpellier

- **ABX464**
  - 2nd Phase Ila top-line data
Financial Highlights

Key Financial figures

<table>
<thead>
<tr>
<th></th>
<th>30/06/2016</th>
<th>30/06/2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D Expenses</td>
<td>9 205</td>
<td>6 959</td>
</tr>
<tr>
<td>Admin Expenses</td>
<td>1 550</td>
<td>1 458</td>
</tr>
<tr>
<td>Total OPEX</td>
<td>10 755</td>
<td>8 416</td>
</tr>
<tr>
<td>Research Tax Credit</td>
<td>2 086</td>
<td>1 080</td>
</tr>
<tr>
<td>Net Result</td>
<td>(8 274)</td>
<td>(7 170)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>30/06/2016</th>
<th>31/12/2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Available Cash</td>
<td>28 121</td>
<td>39 127</td>
</tr>
</tbody>
</table>

Shareholder structure (undiluted)

- Funds managed by Truffle Capital: 68.0%
- Incubator Holding: 2.7%
- Public: 25.0%
- Founders / Management: 3.9%
- Other: 0.4%