

Our mission



To create a world of bionic vision
for those who have lost their sight



Solving blindness from macular degeneration: a major market opportunity

Blindness epidemiology

- 285 million people in the world are visually impaired
- 40–45 million people in the world are totally blind
- In the US and Europe, blindness costs exceed tens of billions of USD per annum

Retinitis Pigmentosa (RP)

- Genetic disease ~ 1/4000
- Blindness occurrence: ~ 35 - 40 years old
- Worldwide prevalence: 1.5 to 2 million
- Prevalence in the US + EU: 350,000 - 400,000
- Incidence (US + EU): 15k-20k patients annually

Age-related Macular Degeneration (AMD)

- Age-related disease
- Later blindness occurrence: 70+ years old
- Worldwide prevalence: 12 to 15 million
- Prevalence in the US + EU: 4 million
- Incidence (US + EU): 350k - 400k patients annually

Attractive addressable >1 Billion Euro + market opportunity*

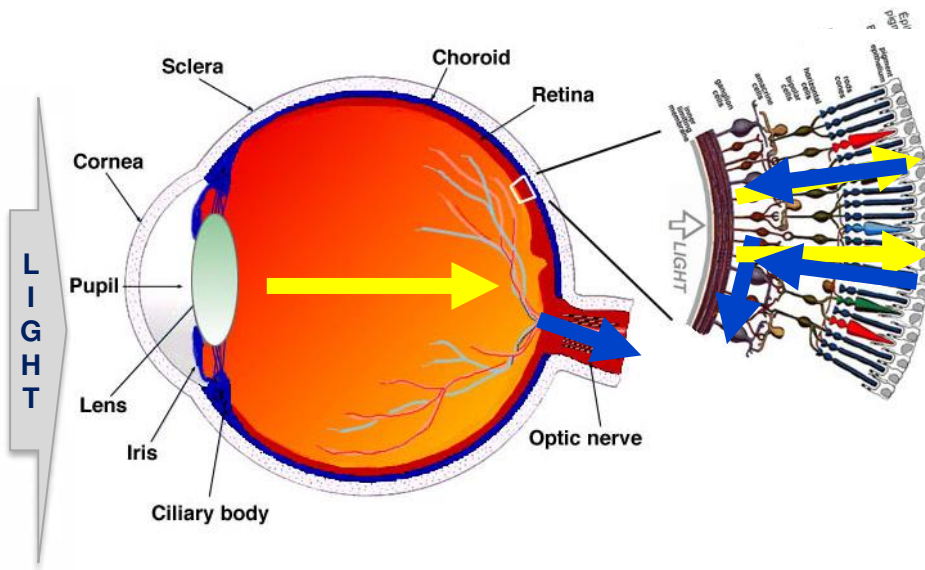
Sources: World Health Statistics. World Health Organization -<http://www.who.org> -NORC Cost of Vision Problems: The Economic Burden of Vision Loss and Eye Disorders in the United States -Study commissioned by Prevent Blindness in America and conducted by University of Chicago -European Forum Against Blindness (EFAB)

Source: 2012 World Health Organization – by 2020 there will be 75 million blind people in the world and 314 million partially-blind people
Fighting Blindness (UK) : 25K in UK and over 2M worldwide
CentralSight fact sheet End-Stage Age-related Macular Degeneration

* Company Estimates

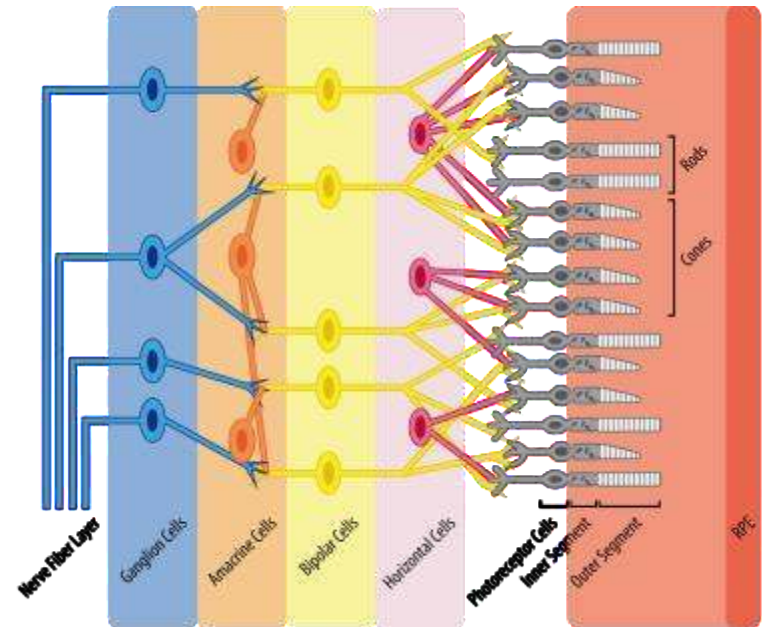
The loss of the photoreceptor function is a major cause of blindness

The eye transforms light into electric signals



- Photoreceptor cells convert light into signals
- The human retina contains 6 million cone cells responsible for central vision

Photoreceptor degeneration does not affect the rest of the retina



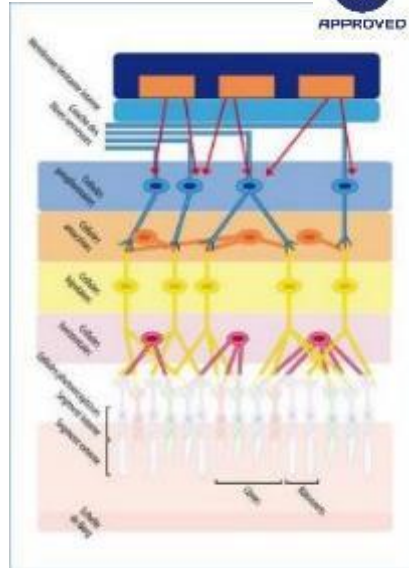
- RP and AMD are linked to photoreceptor degeneration
- **However, bipolar cells, ganglion cells and downstream visual pathways remain INTACT and FUNCTIONAL in the vast majority of RP and AMD patients**

Establish Pixium Vision as a leader in bionic vision system (BVS)

- 1 Two differentiated systems:
 - IRIS®II – CE marked, for Outer Retinal Degeneration (e.g. Retinitis Pigmentosa)
 - PRIMA to expand the market opportunity with dry AMD
- 2 The only company with 2 proprietary retinal implant systems
 - An eco-system of global scientific & technological excellence
 - Intellectual Property & Know-How : Over 250 patents
- 3 Experienced and dedicated management executing the strategy

Establish Pixium Vision as a leader in bionic vision system (BVS)

IRIS[®] II



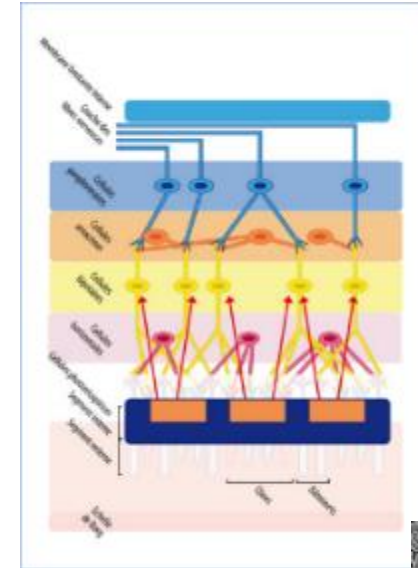
Commercial Launch

- Epi-retinal implant in clinical with novel proprietary Neuromorphic sensor
- Aim for higher resolution with 150 electrodes

Visual interface and
Pocket processor



PRIMA



FIH Feasibility study submission

- Sub-retinal miniaturized wireless photovoltaic implant
- Aim for Facial Recognition
- Aim for dry-AMD

An experienced management team

Khalid Ishaque, CEO



- 20+ years experience in the medtech industry in neuromodulation
- Boston Scientific (1997-2014) - General Manager Neuromodulation International

Didier Laurens, CFO



- 18 years experience in Corporate Finance / Financial Markets
- Korian - Director IR, Group Financing & Treasury
- Financial Analyst (SGCIB, Oddo)

Guillaume Buc
CTO



Karine Chevré
RA/QA Dir.



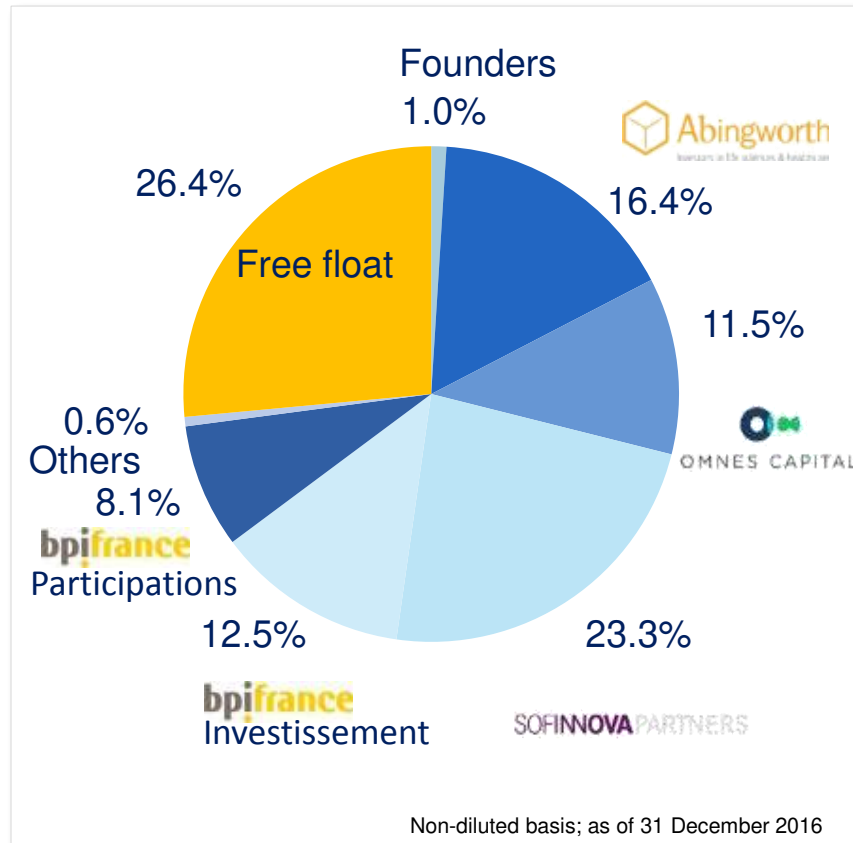
Robert Hill
COO



Ralf Hornig
Clinical Affairs Dir.



Shareholder structure – Board of Directors



Board of Directors

B. Gilly (Chairman)
K. Ishaque (CEO)
BPIfrance Participations – M. Ferrere
BPIfrance Investissement – C. Louafi
J. Reinstein (independent)
R. W. Ten Hoedt (independent)
Kreos Capital (Observer)
Sofinnova Partners (Observer)
T. Haines (Observer)

Bernard Gilly, *Chairman*



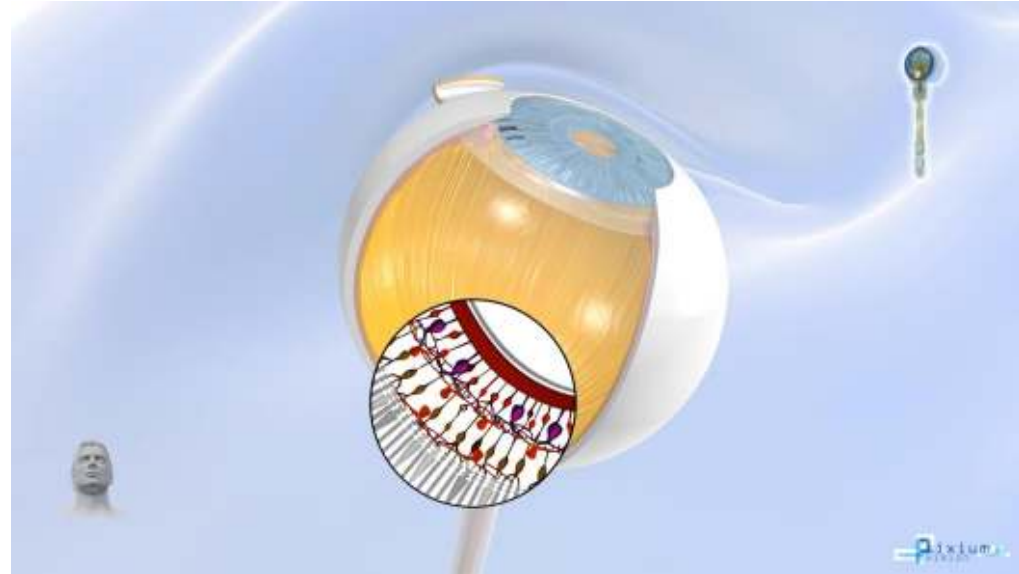
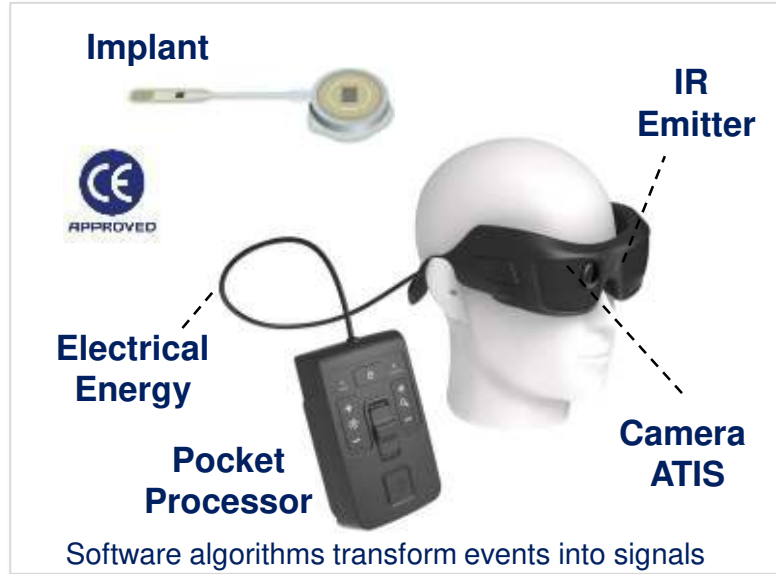
- 20+ years experience in the lifesciences sector
- Fovea Pharma (2005-2009) Chairman & CEO - sold to Sanofi
- Sofinnova (2000-2005) - Managing Partner
- Transgene (1992-2000) - Chairman & CEO



IRIS®II: A clear path to market

Aiming for a leading market position

IRIS[®]II an innovative epi-retinal system targeting Retinitis Pigmentosa



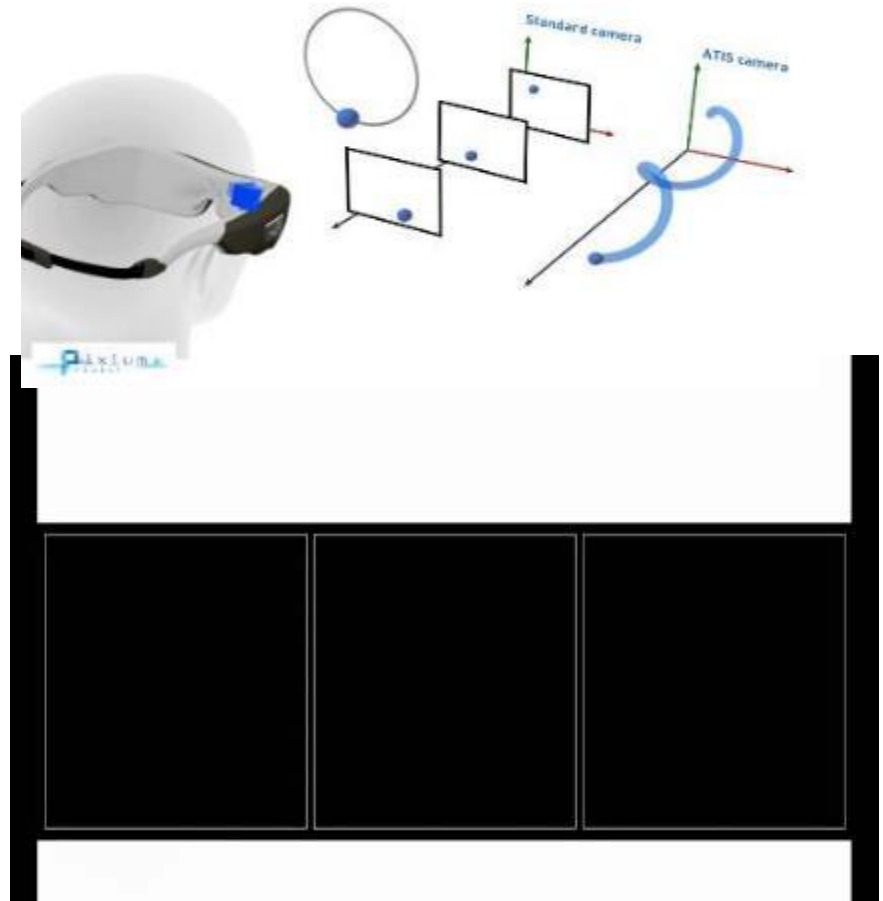
Initial goal is to deliver light and shape perception, and to localize objects giving the patient the ability to negotiate an unfamiliar environment

IRIS®II: An innovative and distinctive epi-retinal bionic vision system

Device Features		IRIS®II	IRIS® Advantage
Technology	Camera	Neuromorphic Event Based	Mimics the human retina
	Patient Programming - Tuneability	Yes	All patients respond and learn differently; IRIS is flexible to patient needs
	Number of Electrodes	150 electrodes	3x more than IRIS®I
Surgery	Surgical Procedure	Possible within 2.5 hours	Shorter surgery
	Explant and Replacement	Yes	Technology is always evolving and improving; patients need the option of upgrading to new technologies in the future

Visual Interface with Smart Bio-inspired Neuromorphic (Event Based) Camera

- Camera features :
 - Breakthrough bioinspired camera: mimics normal vision in real time.
 - Neuromorphic - asynchronous, event-based: light is encoded into asynchronous impulses (-1,0,+1): Reduces energy consumption and processing bandwidth
 - Output relates directly to signals observed in the corresponding levels of biological retinas
- Wireless energy and data transmission



How Neuromorphic Image Sensors Steal Tricks From the Human Eye

Indicative Post-Surgery Training Protocol

- As artificial vision with visual prosthesis will vary from that offered by the functional visual system, it is necessary to provide users with adequate training for useful vision
- The recommended training facilitates the adaptation of the visual cortex to artificial phosphene images, so that the user may use the device more effectively for daily living
- Four primary training protocols are recommended to help facilitate adaption

Camera switch-on takes place 4-5 weeks after surgery and is followed by
1 training session of up to 4 hours each week for 6 months



Square Localization Training

- Users learn to identify the location of a square on a screen (five different quadrants)
- Minimum required training: 1 hour



Grating Training

- Users learn to distinguish between separated lines with decreasing gaps between lines
- Minimum required training: 1 hour



Direction of Motion Training

- Users are trained to identify moving objects
- Minimum required training: 30 min



Picture Test Training

- Users are eventually moved up to object and shape recognition training
- Minimum required training: 30 min

The patient pathway



Turning on the camera
The patient learns to differentiate between true and false perceptions

Location of objects and estimation of size, shapes

Exercises contrasting objects on black background (table)



Direction of movement
Bar that moves horizontally, vertically or diagonally

Contrast sensitivity

Learning to discriminate the contrasts between white, black and gray



Internal orientation and mobility test

External orientation and mobility test



Readaptation and Reeducation



Clinical Trial of IRIS® Has Demonstrated Safety and Efficacy

Open-label, non-randomized, multicenter, prospective, first-in-human clinical study to evaluate safety and performance of the IRIS®I system

Patients and Schedule Assessment

Patients with retinitis pigmentosa, choroideremia and cone-rod dystrophy (n= 8)
Examinations every 3 months up to 18 months for each patient

Primary Endpoint

Number of adverse events as a measure of safety and tolerability
Based on a series of ophthalmological examinations (i.e. funduscopy, slit lamp and OCT) after implantation

Secondary Endpoint

Probable benefit
Grating visual acuity, light localization and contrast sensitivity tests performed before / after the implantation

Safety and Tolerability

- Number of adverse events:
 - ▶ 1 month average: 1.1 (n=8)
 - ▶ 6 month average: 1.1 (n=8)
- Main adverse events:
 - ▶ Conjunctival erosion
 - ▶ Retinal tear
 - ▶ Hypotony

Efficacy

- Pre-implantation: logMAR > 2.7 in all patients
- Post-implantation – Device is active:
 - ▶ 5 patients with a measurable visual acuity
 - Average logMAR of 2.0
 - Best logMAR of 1.3
 - ▶ 3 patients with no measurable visual acuity
- Post-implantation – Device is NOT active:
 - ▶ All patients except one with logMAR > 2.7

IRIS® II Pricing & Reimbursement Considerations

Post CE Marking

Annual Cost of blindness

€40-50k per patient per annum

Competitor⁽¹⁾ reimbursement benchmark

	€80,000		€100,000
	€96,000		\$150,000
	£150,000		C\$200,000

Comparative MedTech therapies



As cochlear implants

Quality of clinical data



and software improvement

Planned Pricing for IRIS® II of €80-100k € in EMEA

Countries with Fast-track Reimbursement Programs

- Germany:
 - NUB reimbursement granted;
 - On-going discussion with selected hospitals
 - Sales representatives hired
- France “Forfait Innovation”
- UK: Accelerated review pathway

Other Target EMEA Countries

- Spain:
 - No fast-track program
 - Hospital-based decision to grant access to reimbursement
 - Sales representatives hired
- Middle Eastern Countries:
 - Access through local distribution agreements
- Other EU countries, including Eastern Europe

IRIS® II is expected to be reviewed and approved for standard reimbursement access based on longer term safety and efficacy data

(1) Argus II pricing

A lean and specialized commercial organization

25 to 30 key ophthalmic surgery centers in Europe



These centres give access to
~80% of qualifying patients*

Market development process

- KOL engagement:
 - Doubling the number of centers since end 2015 ✓
- Discussions with patient associations in every targeted country ✓
- Participation in major scientific and medical conferences
 - Active participation at ARVO, Euretina, Eye and the Chip... ✓



* Company Estimate



PRIMA

Sub-retinal Wireless Bionic Vision System

Treating Macular Degeneration dry AMD :

“Tiny implantable solar panels could help the blind see one day”



Treating blindness

Bionic eyes

A new device may restore vision to those whose sight is dwindling



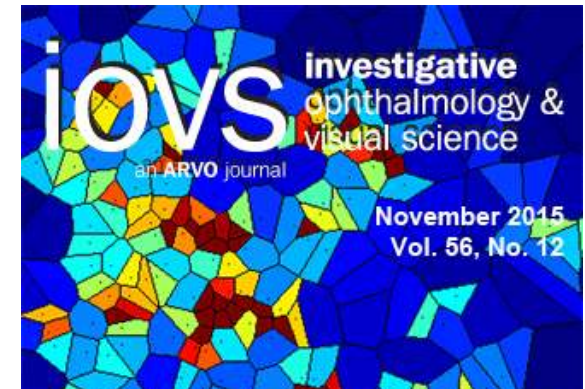
Photovoltaic restoration of sight with high visual acuity



Nature

Medicine (2015) doi:10.1038/nm.3851

<http://www.nature.com/nm/journal/vaop/ncurrent/full/nm.3851.html>



Interactions of Prosthetic and Natural Vision in Animals With Local Retinal Degeneration

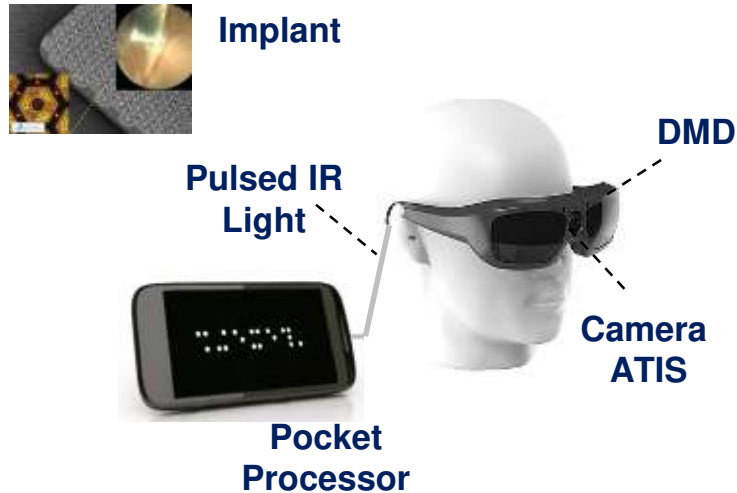


Investigative Ophthalmology & Visual Science November 2015, Vol.56, 7444-7450.
doi:10.1167/iovs.15-17521

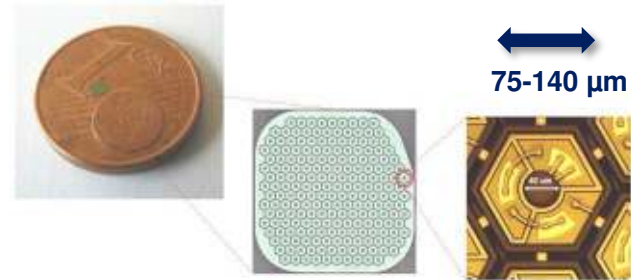
<http://iovs.arvojournals.org/article.aspx?articleid=2474145&resultClick=1>

The PRIMA System, optimal approach for dry AMD

Next generation technology designed to deliver further clinical benefits



Software algorithms transform events into signals



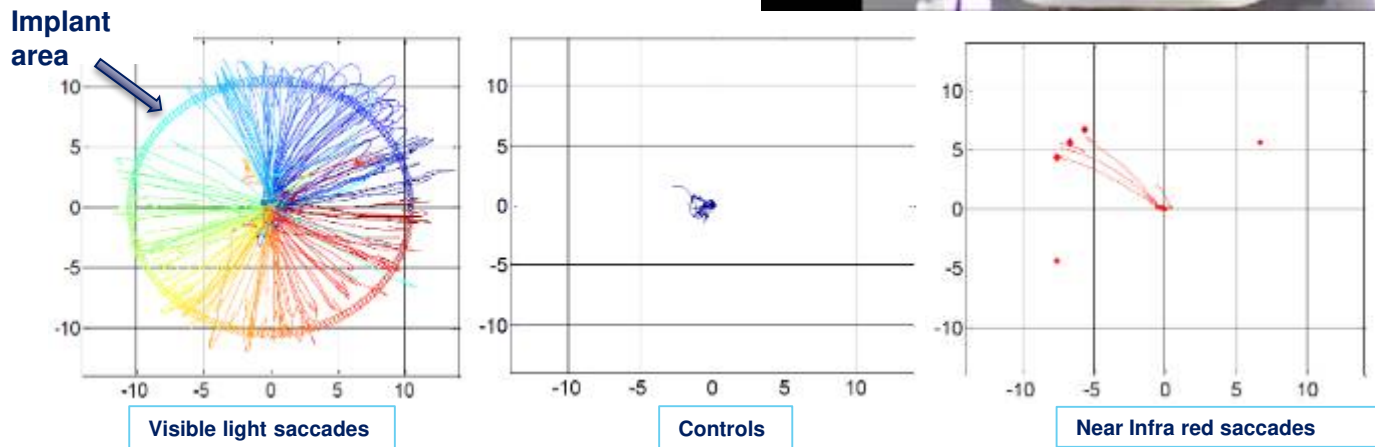
- Physiological signal processing
- Simpler and shorter surgical procedure
- Retinal chips in modules up to several 1000 electrodes
- Advanced processing algorithms
- Reduced energy requirements enabling miniaturization of components

Ultimate Goal is to deliver improved visual perception to the level of facial recognition



Pre-clinical Testing - Behavioral Studies

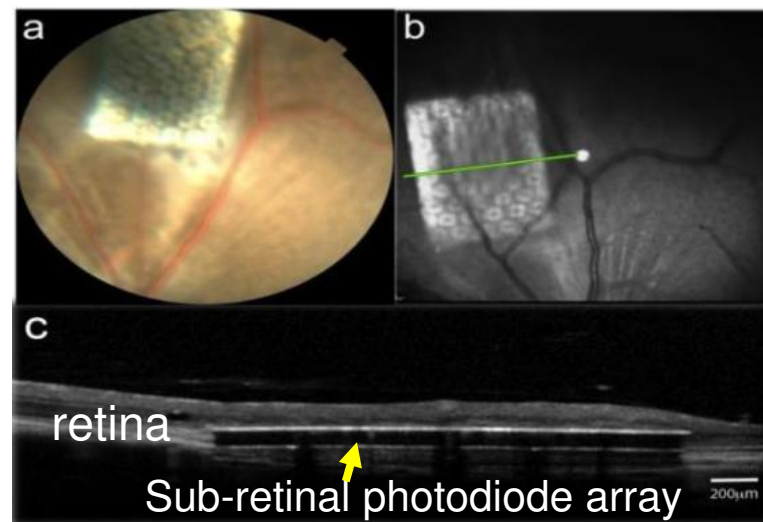
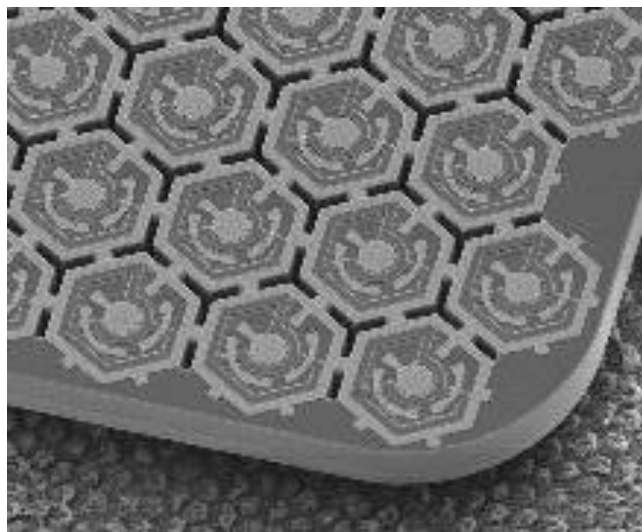
- Implanted RCS rats reacted to prosthetic stimulation by startling (freezing) response (fear response) to NIR flashes.
- This response was absent in the age-matched non-implanted RCS rats as well as in implanted Long Evans rats, indicating that it is mediated by the implant and that remaining natural vision in Long Evans rats at room lighting conditions negates startling response.



Results: Primate responded to IR stimulation on the implant with spot sizes allowing single pixel stimulation (100um), demonstrating visual perception of those patterns. Achieved at energy levels well below safety limits required for human applications.

PRIMA: preparing the first clinical steps

- Scale-up of manufacturing process ongoing
- On-going discussions with regulatory bodies



First in human expected in 2017



FY 2016 Financials

FY 2016

P&L summary

<i>in thousand euros</i>	2016	2015
Revenue / other revenues (*)	2,515.9	3,293.3
Operating expenses	(15,014.7)	(18,992.8)
Cost of Goods Sold	(141.0)	-
Research and Development	(10,869.4)	(15,169.0)
Selling, General and Administrative	(4,004.4)	(3,823.9)
Operating income	(12,498.9)	(15,696.5)
Net profit	(12,440.8)	(15,644.4)
Earnings per share	(€0.98)	(€1.23)

(*) O/W Research Tax Credit

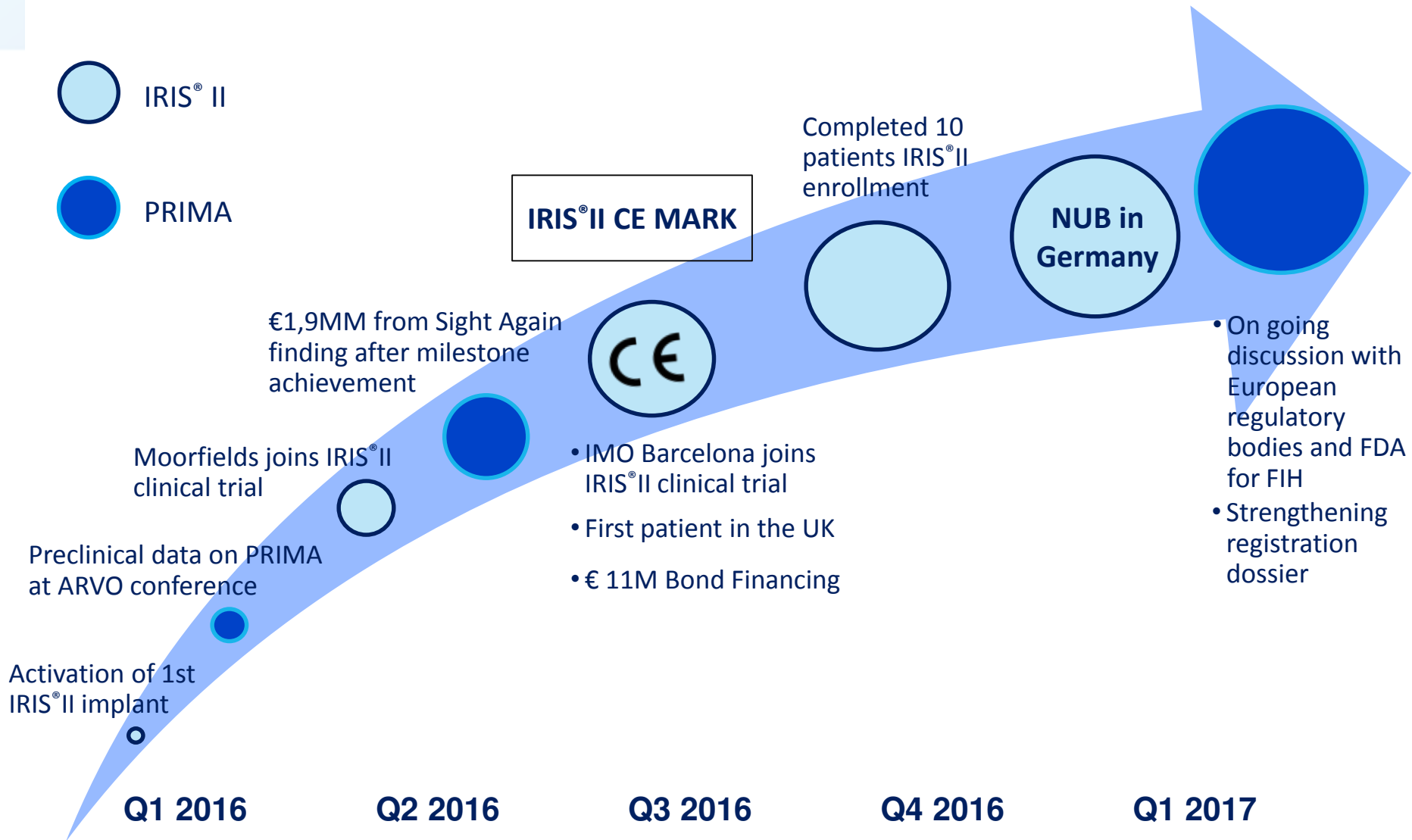
Cash flow statement summary

<i>in thousand euros</i>	2016	2015
Opening cash and cash equivalents	24,353.8	42,131.7
(Decrease) / Increase in cash position	(10,109.7)	(17,777.9)
<i>O/W net cash flows from operating activities</i>	(11,129.9)	(15,532.1)
<i>O/W net cash flows from investing activities</i>	(148.5)	(2,298.9)
<i>O/W net cash flows from financing activities</i>	1,168.7	53.0
Closing cash and cash equivalents	14,244.2	24,353.8



Pixium's steady development

Pixium Vision delivers major milestones



Pixium Vision short term focus

IRIS[®] II



**Commercial launch
and first sales**

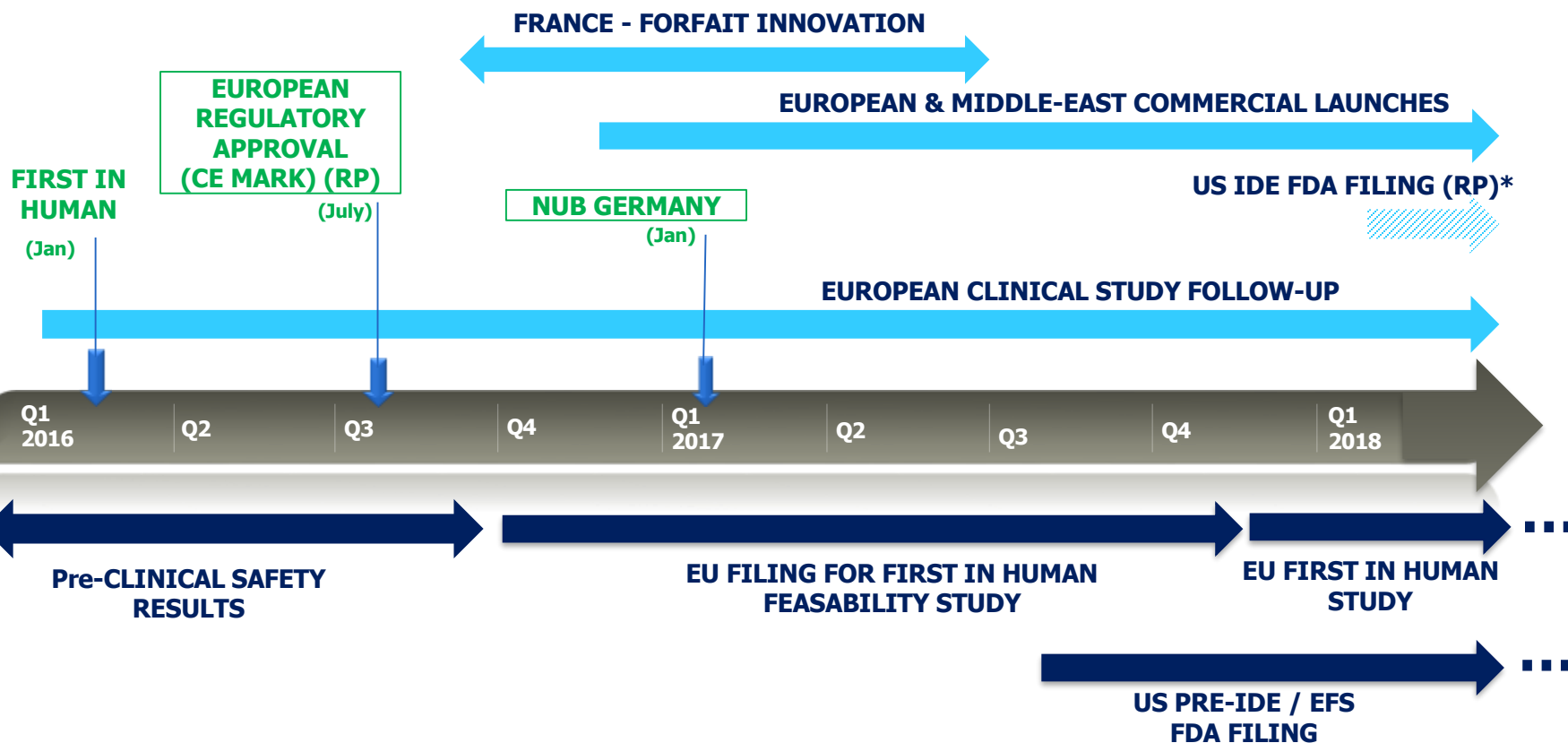
PRIMA



**Clinical feasibility approval
and first implantation in
Human**

Next milestones for IRIS®II and PRIMA

IRIS® II



PRIMA

(*) The filing for IDE of IRIS II depends on the upcoming decision of FDA about PRIMA pre-IDE

Pixium Vision: impact on the life of those who have lost their sight



label
observateur design
2016

7th
INNOVATION
PRIZE PARIS-2015
An event by Universal Biotech

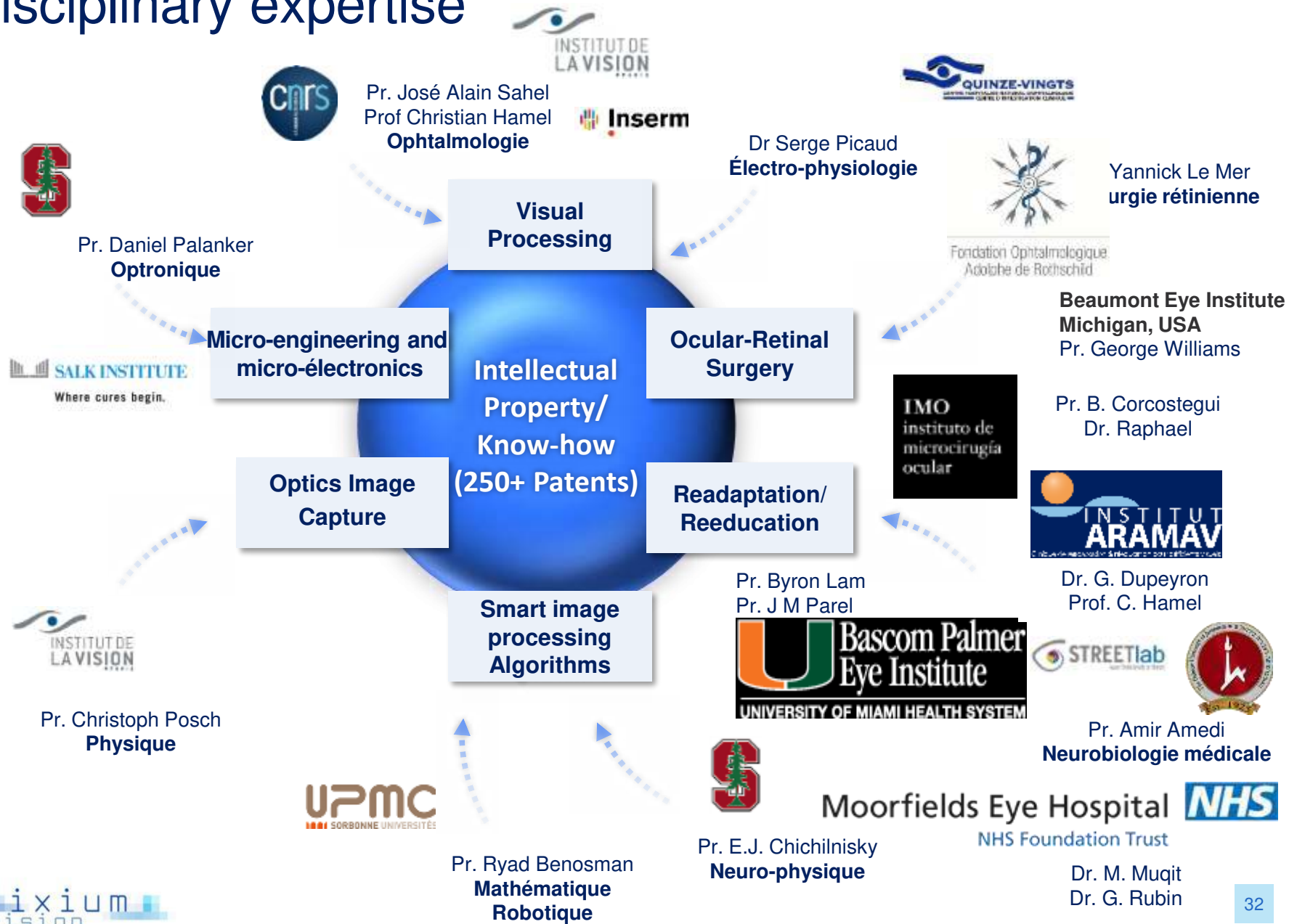


INSTITUT
FRANÇAIS
DU DESIGN

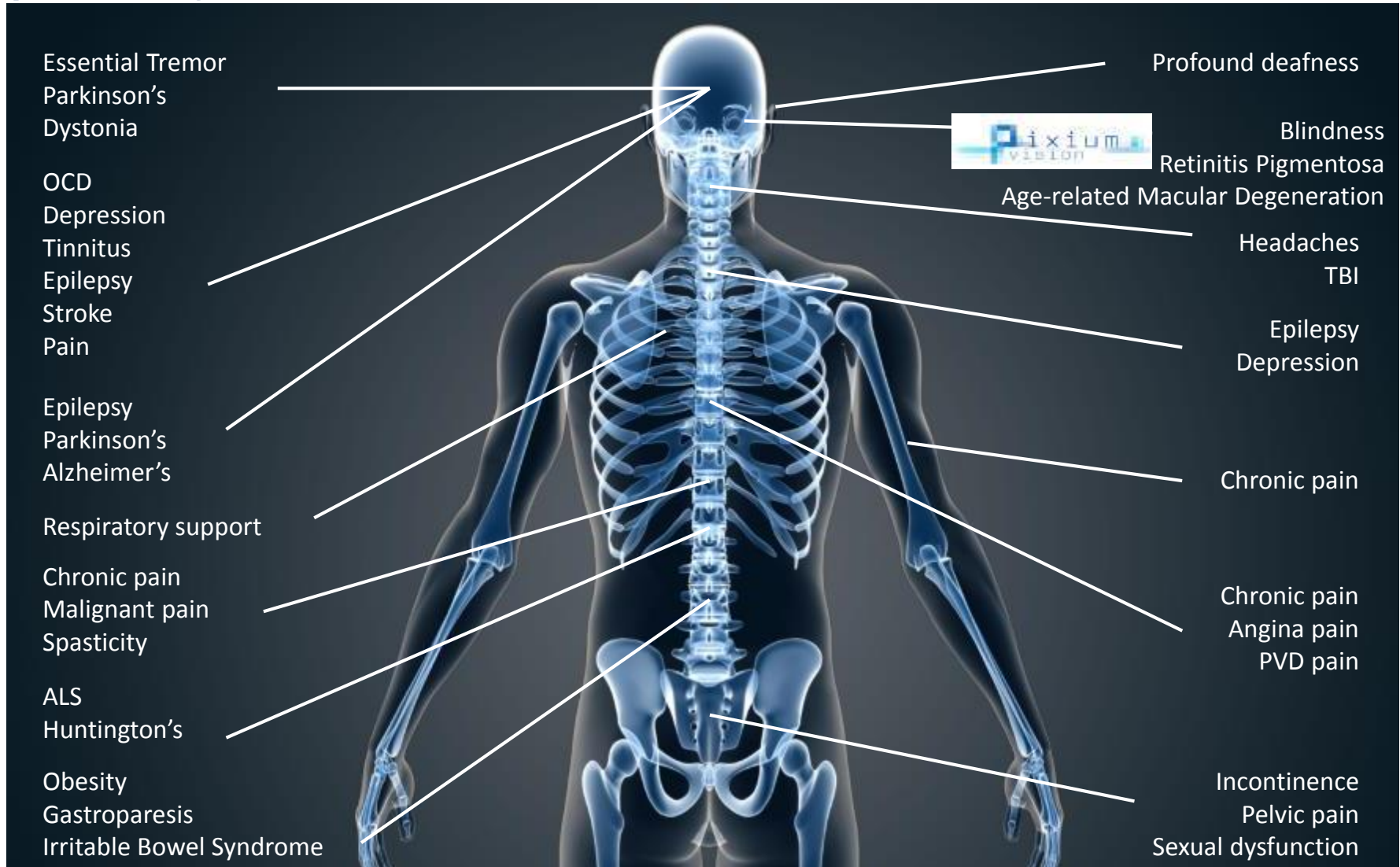


Appendices

Convergence: technological advances + global multi-disciplinary expertise



Pixium Vision: pushing new frontiers of “neuromodulation”



Induction of biological responses from electrical stimulation on nerves or zone where nerve activity is affected

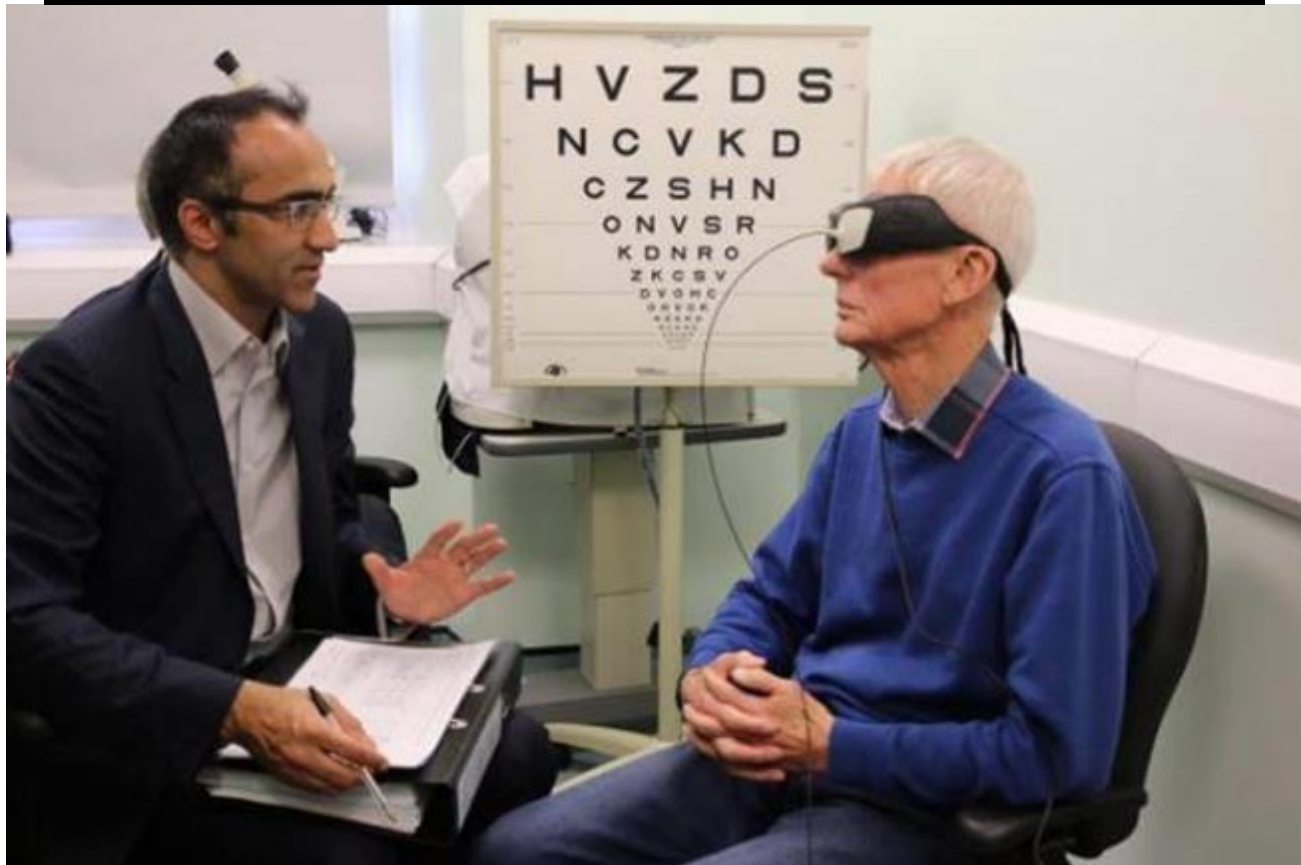
Successful implant of 1st patient in UK at Moorfields Eye Hospital in London in October 2016

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News > Health

Blind man recovers some sight after getting 'bionic eye' from London surgeons

ROSS LYDALL | Monday 7 November 2016 | [0 comments](#)



Testimonials from the two first implanted patients



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Pixium Vision shares are eligible for the French tax incentivized PEA-PME and FCPI investment vehicles.

Pixium Vision is included in the Euronext CAC All Shares index



Euronext ticker: PIX - ISIN: FR0011950641 – Reuters: PIX.PA – Bloomberg: PIX:FP

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