

A background image showing a laboratory setting with several test tubes hanging from a rack and a grid of petri dishes in the foreground, all illuminated with a blue light.

Developing first in class  
cardiovascular drugs

**RODMAN & RENSHAW - 2016 CONFERENCE - NEW YORK**

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Copies of the Document de Base filed with the AMF on January 26, 2015 under the number I. 15-036 may be obtained free of charge and upon request from Quantum Genomics, 2 -12 Chemin des Femmes, Bâtiment l'Odyssee, 91300 Massy, France - and from the internet websites of Quantum Genomics ([www.quantum-genomics.com](http://www.quantum-genomics.com)) and the AMF ([www.amf-france.org](http://www.amf-france.org)).

**Quantum Genomics draws the public's attention to chapter 4, "Risk factors", of the Document de Base registered with the AMF.**

- Novel therapeutic class - brain aminopeptidase A inhibitors (BAPAls) - provides antihypertensive effects and cardioprotection
- Strategy to target patient subgroups in prevalent indications with high unmet medical needs (hypertension and heart failure)
- Lead program, **QGC001**, completed 30-patient phase IIa study in hypertension - results to be published in the second half of September 2016
- Initiated **QGC101** congestive heart failure program: first 3 clinical centers opened mid 2016 in France and Norway for pan-European phase IIa study
- Broad intellectual property portfolio, multiple patent families granted or filed
- Experienced management team and Scientific/Clinical Advisory Board

 **1/3**

At least 1/3 of adults has high blood pressure. Proportion increases to one in two for people above age 50<sup>(1)</sup>

 **9.4 million**

Deaths worldwide every year due to complications of high blood pressure<sup>(1)</sup>

 **1/3**

people die due to cardiovascular disease. With 17 million deaths per year, it is the leading cause of death worldwide<sup>(1)</sup>



*"Hyper-pressure contributes to nearly 9.4 million deaths due to heart disease and stroke every year and, together, these two diseases are the number one cause of death worldwide. And, hyper-pressure also increases the risk of kidney failure, blindness and several other conditions. It often occurs together with other risk factors like obesity, diabetes and high cholesterol – increasing the health risk even further."*

**WHO Chief Dr Margaret Chan – World Health Day April 07, 2013**

 **\$ 40 billion**

Global anti-hypertensive drugs market in 2013<sup>(2)</sup>

 **\$ 39 billion**

Global heart failure drugs market estimate for 2015<sup>(3)</sup>

Sources : (1) WHO (World Health Organization) - A global brief on hypertension, Silent killer, global public health crisis (2013),  
(2) the pharmaletter (June 2014),  
(3) Heidenreich et al, Circulation Heart Failure (2013)

Top-selling antihypertensive drugs

Blockbuster (I.N.N.)	Company	Main Patent expiration date
<b>Diovan</b> (valsartan)	<b>NOVARTIS</b>	Sept. 2012
<b>Micardis</b> (telmisartan)	<b>Boehringer Ingelheim</b> <b>Bayer HealthCare Pharmaceuticals</b>	Jan. 2014
<b>Benicar, Olmetec</b> (olmesartan)	<b>Daiichi-Sankyo</b>	Oct. 2016
<b>Avapro, Aprovel</b> (irbesartan)	<b>SANOFI</b> <b>Bristol-Myers Squibb</b>	Mar. 2014
<b>Blopress</b> (candesartan)	<b>Takeda</b> <b>AstraZeneca</b>	Jun. 2012

Antihypertensive drugs account for 5 of 10 top-selling cardiovascular products, each with annual sales >\$1 billion

Pharma industry pipeline lacks innovation; majority of late stage programs focused on combination therapies using existing drugs

Increasing generic threat creates significant need for innovative antihypertensive therapeutic candidates



1

BAPAI : novel therapeutic class



✓ Quantum Genomics, the *BAPAI* company, is developing first in class treatments targeting a new pharmacological pathway in the brain

✓ Benefitting from more than 20 years of the leading European academic research



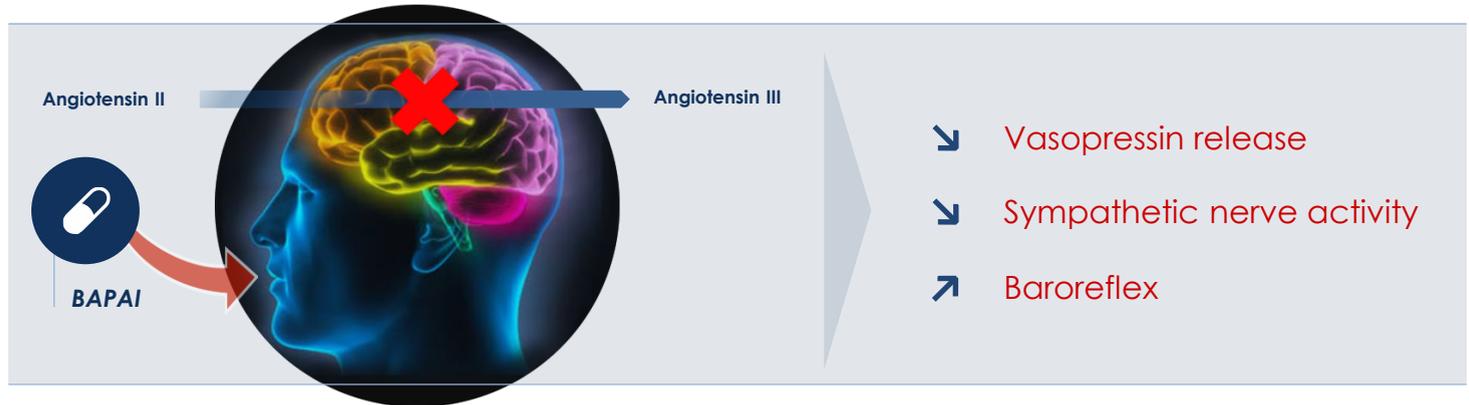
**Catherine Llorens-Cortes,**

PhD in Neurobiology, Director of the Central Neuropeptides and cardio-vascular hydro-regulation research team – College de France CIRB-CNRS UMR U1050 7241/INSERM



2014  
Category  
« Research team »

## Inhibition of Aminopeptidase A



Increase of the diuresis  
(urinary elimination)



Lowering vascular  
resistance



Controlling  
heart rate



**BAPAI** are innovative drugs that target a new central pharmacological pathway leading to both antihypertensive effects and cardioprotection



**Mechanism of action described in several peer reviewed academic publications:**

Bodineau & al – Hypertension – 2008

Marc & al – ProgNeuroscience – 2011

Marc & al – Hypertension - 2012

- **LRHV patients (around 30% of total hypertensive population) have mostly uncontrolled or poorly controlled high blood pressure**
- **LRHV profile is overexpressed in elderly, Asian, African American and Hispanic populations**
- **ACEs and ARBs drugs are not effective for LRHV patients**

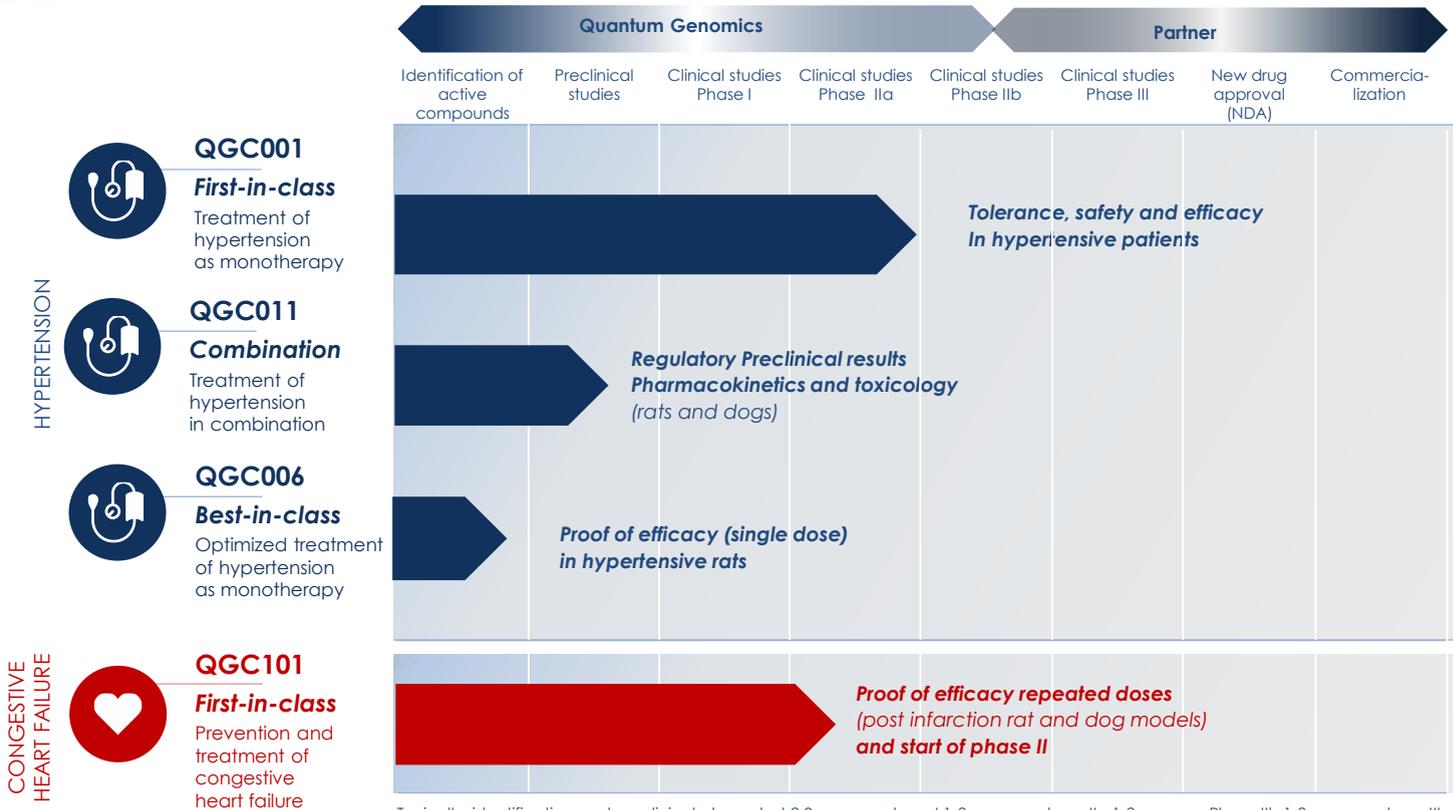




2

Robust pipeline of new drug candidates

# Pipeline of four R&D programs



Typically, identification and preclinical phases last 2-3 years, a phase I 1-2 years, a phase IIa 1-2 years, a Phase IIb 1-2 years, a phase III 2-3 years and new drug approval and commercialization 2-3 years.

Target discovery

Identification of active compounds

Preclinical studies

Clinical studies Phase I

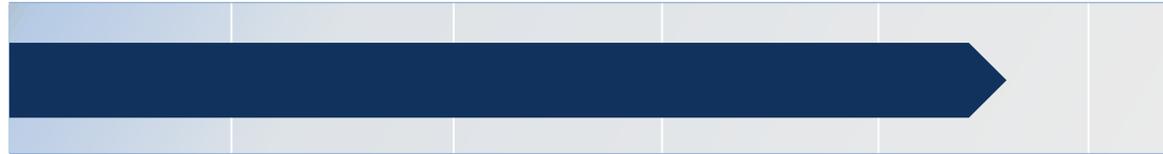
Clinical studies Phase II



## QGC001

### First-in-class

Stand alone treatment of Hypertension



### Phase Ia • 2012

Randomized, double blind, placebo controlled study of single ascending doses in 80 healthy volunteers

➤ **Positive : overall safety and tolerability of QGC001 up to 2g**



### Phase Ib • 2013

Randomized, double blind, placebo controlled study of multiple ascending doses in 44 healthy volunteers

➤ **Positive : overall safety and tolerability of QGC001 up to 750mg twice a day and no food interaction**



### Phase IIa • Q1 2015

Initiation of a phase IIa in 30 hypertensive patients



### ➤ Michel Azizi, MD,

Medical Doctor, University Professor – Hospital Practitioner Director of CIC 9201 (Cardiovascular, renal, endocrine pathology and physiology)





- **4 Centers in France all labelled as “Centers of Excellence” by the European Society of Hypertension. Principal Investigator:** Pr. Michel Azizi - Hôpital Européen Georges Pompidou - Paris
- **Safety endpoints :** Evaluated from signs, symptoms and laboratory tests at each visit
- **Pharmacokinetics endpoints :** Measured twice during each of the two treatment periods
- **Efficacy endpoints include :**
  - 24 hours ambulatory blood pressure measurement (ABPM)
  - Home blood pressure measurement (HBPM)
  - Office blood pressure measurement (OBPM)
  - Hormonal measurement of several biomarkers

- **2015 events :**

- **June 2015 : Proof of efficiency in a dog model.** The results show an improvement during the fourth week in the cardiac ejection fraction in dogs treated over a 28-day period compared to untreated dogs.
- **July 2015 : Research collaboration agreement** in heart failure with University of Ottawa Heart Institute and the Center for Interdisciplinary Research in Biology at College de France.



- **Mid 2016 : initiation of a phase IIa trial in congestive heart failure - multicentric in several European countries**

## Phase IIa • Q2 2016

Initiation of a phase IIa clinical trial



- **Professor Faiez Zannad, PhD, lead expert since July 2015**

Head of the hypertension and heart failure unit of the cardiology department at Institut Lorrain du Cœur et des Vaisseaux (CHU Nancy)



3

Efficient organization and strong assets



## Lionel Ségard - President & CEO

Former CEO of Inserm-Transfert, subsidiary of INSERM (French National Institute for Health and Medical Research)  
 Founder and former president of Inserm Transfert Initiative (seed fund dedicated to young, innovative healthcare companies)  
 Founder of the Strategic Council for Innovation (secretary general from 2003 to 2005), The Council's goal is to boost French efforts in the field of research and high technologies and included key figures from France's science, industry and financial community  
 Biochemist by training (University of South Paris - Orsay)



## Jean-Philippe Milon, PhD - Chief Operating Officer

Several management positions at Bayer HealthCare, then member of the Worldwide Executive Committee as head of WW Business Development, Licensing, Mergers & Acquisitions  
 Previously head of the cardiovascular business at Sandoz  
 More than 25 years of experience in Healthcare mainly in the Pharmaceutical Industry



## Marc Karako - Chief Financial Officer

Previously Executive Vice President & Chief Financial Officer of Carlson Wagonlit Travel  
 Former Chief Financial and Legal Officer of Vallourec. Former Vice President Finance at Thomson Multimedia  
 10 years at IBM in various financial management positions.  
 Master of engineering (Ecole des Ponts ParisTech) and MBA from the University of Chicago



## Fabrice Balavoine - Vice President Research & Development

15 years of experience in Drug Discovery and Drug Development  
 Participated in the development of several drug candidates (new chemical entities, peptides and recombinant proteins) that reached clinical stages in different therapeutic areas. Ph.D. in Organic Chemistry from the University Paris-Sud, master of science from Ecole Supérieure de Physique et de Chimie Industrielle of Paris (ESPCI) and Executive MBA from the ESSEC & Mannheim Business School



## Olivier Madonna - Chief Medical Officer

In depth knowledge of international R&D processes within pharmaceutical, biotech and medical device industries  
 Previous experience as Head of cardiovascular medical departments with MSD and J&J  
 MD Cardiologist, Nephrologist, Specialist in Internal Medicine

## Scientific Advisory Board

### Pierre Corvol, MD, Chairman

Professor Emeritus at Collège de France • Honorary President of Collège de France  
 Member of the Academy of Sciences • Member of the Academy of Medicine  
 Member of the American Academy of Arts and Sciences



## Clinical Advisory Board

### Keith Ferdinand, MD

Professor of Medicine at the Tulane University School of Medicine (New Orleans)

He is a specialist in Hypertension certified by the American Society of Hypertension  
 Pr Ferdinand has conducted numerous trials in the fields of cardiovascular disease / hypertension especially in racial and ethnics minorities



### Professor Mark Caulfield

Co-director of William Harvey Research Institute, Barts and The London School of Medicine and Dentistry, Queen Mary University of London (UK) • Director of the NIHR Biomedical Research Unit in Cardiovascular Disease at Barts (UK)  
 Member of the Academy of Medical Sciences in the UK



### Henry Black

Former President of the American Society of Hypertension, Dr Black has been in a leadership role in several landmark clinical trials including the Systolic Hypertension in the Elderly Program

Member of the section of Cardiology at the New York University School of Medicine



### Professor Alexandre Persu

Head of the Hypertension Clinic, Cardiology Department, Cliniques Universitaires Saint-Luc, Catholic University of Louvain, Brussels, Belgium  
 Member of the International and European Society of Hypertension



### Howard Dittrich

Adjunct Professor of Medicine at the University of Iowa Carver College of Medicine and Chairman of the board of Directors of the F. M. Abboud Cardiovascular Research Center (University of Iowa).

He is a cardiologist with more than 20 years of experience in cardiovascular research and clinical development & he serves as an Entrepreneur in Residence for Frazier Healthcare Partners and serves as chairman or directors for several biotech or medtech companies



	Patent family 1 (granted)	Patent family 2 (granted)	Patent family 3 (granted)	Patent family 4 (filed)	Patent family 5 (filed)	Patent family 6 (filed)
Owner	 (exclusive WW license)	 (exclusive WW license)	 (exclusive WW license)			
Area of invention	Concept of BAPAI to treat hypertension (active ingredient patent)	QGC001 for the treatment of hypertension and related diseases	QGC006 for the treatment of hypertension and related diseases	QGC001 trihydrate form (current product) for the treatment of hypertension and related diseases	QGC011 for the treatment of hypertension and related diseases	QGC001 L-lysine form for the treatment of hypertension and related diseases
Status	Granted 	Granted 	Granted 	Under review * Zone PCT + 	Under review Zone PCT	Under review * Zone PCT + 
Expiration date	14/01/2019	16/07/2023 *	06/08/2024 **	07/11/2031	21/12/2032 *	10/22/2033 *

\* Potential patent protection extension for 5 years

\*\* Data exclusivity if the patent expires before the date of market availability (10 years in France, 5 years in the USA)



**Patents operated by Quantum Genomics provide secure protection for future drugs up to 2033 (plus potential 5 years extension)**

\* Already granted in the US and several countries

## Simplified income statements and balance-sheet

Audited data in K€ French GAAP	2015	2014
Income	167.4	341.1
Personnel expenses	(1,600.2)	(1,302.8)
Other operating expenses	(2,877.3)	(1,455.8)
<b>OPERATING RESULT</b>	<b>(4,310.1)</b>	<b>(2,417.5)</b>
<b>FINANCIAL RESULT</b>	<b>(192.9)</b>	<b>(119.4)</b>
<b>EARNINGS BEFORE TAXES</b>	<b>(4,478.1)</b>	<b>(2,541.9)</b>
<b>RESEARCH TAX CREDIT</b>	<b>713.8</b>	<b>335.0</b>
<b>NET INCOME</b>	<b>(3,764.3)</b>	<b>(2,206.9)</b>

Audited data in € French GAAP	12/31/2015
Fixed assets	520.0
Inventory/receivables	1,085.1
Cash	8,652.1
Prepaid expenses	283.1
<b>TOTAL ASSETS</b>	<b>10,540.3</b>
Shareholders equity	8,022.0
Other equity (conditional advance)	727.5
Provisions	0.0
Financial debt	0.0
Current liabilities	1,790.8
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>10,540.3</b>

## Capital breakdown:

(8,390,521 shares)

- Alix AM: 14.6% (Singapore)
- Tethys: 11,8% (owns 33% of L'OREAL)
- Management: 10,6%
- Float: 63,0% (of which Sabby Mgt, USA)

### ● Stock market data

- Listed on Alternext Paris since April 10, 2014.
- ISIN : FR0010783837.
- Ticker code : ALQGC.
- Market capitalisation: 50 M€ as of September 1, 2016.



### ● Potential dilution

- Up to 1,605,316 new shares could be issued if all existing common share purchase warrants were to be exercised, which represents 16% potential dilution



4

A strategy focused on rapid value creation

## Quantum Genomics targeting partnerships with big pharma

### Goal

Building an alliance with a pharmaceutical company to develop the BAPAI platform

### Upfront/ Milestones

Financing clinical and regulatory trials starting from the signature of the license

### Royalties

The partner will be in charge of marketing and sales activities  
Starting sales ASAP after New Drug Approval  
Quantum Genomics will receive royalties on sales

### Representative Transactions

Acquirer	Developer	Indication	Status	Terms
 Bristol-Myers Squibb	 Cardioxyl PHARMACEUTICALS	Heart Failure	Phase II	Acquisition up to \$ 2 billion+, with \$300 M upfront and potentially a further \$1.775 billion based on development, regulatory and sales based milestones
 SERVIER	 xention creating new medicines	Cardiovascular	Phase I	Upfront payment + up to € 120 million license fees and milestone payments; Servier to continue development of XEN-D0103; Owns commercial rights ex US and Japan
 NOVARTIS	 Speedel	Hypertension	Phase II	Acquisition (90.3% of shares) : \$ 882.3 million

2016

2017



QGC001

- Phase IIa:**
- ✓ Patients enrollment: 100%
  - ✓ Study completion in April
- Results released in September

**Start of 2 Phase IIB trials:**

- In the US, on targeted population
- In Europe, with focus on biomarkers



QGC101

- ✓ Initiation of phase IIa in humans in Q2
- ✓ Agreement with existing partner in animal health

End of clinical part of phase IIa in Q4