Molecular Imaging to Enhance Patient Outcomes in Cardiovascular Disease
This presentation contains “forward-looking statements” within the meaning of the Securities Act of 1933, as amended, the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995, which are intended to be covered by the safe harbor created thereby. You can identify forward-looking statements by words such as “anticipates,” “expects,” “intends,” “plans,” “projects,” “believes,” “estimates,” and similar expressions. Specifically, statements regarding FluoroPharma’s future business, including any revenue projections, costs, earnings or other financial items, as well as statements relating to the objectives of management and other business plans, including anticipated new products and investments, are forward looking statements. These forward-looking statements are not guarantees of future performance but are rather based upon management's current expectations and assumptions as to future events that may not prove to be accurate. Actual results may differ materially from those projected as a result of certain risks and uncertainties, including but not limited to: the demand for diagnostic imaging; the growth of the markets addressed by our products; the demand for and market acceptance of our products; our ability to successfully compete in the markets in which we do business; our ability to successfully address the cost structure of our products; the ability to develop and implement new technologies and to obtain protection for the related intellectual property; and our ability to realize financial and strategic benefits of past and future transactions. Other factors that could cause actual results to differ materially from those described in the forward-looking statements include other economic, business, competitive and/or regulatory factors affecting FluoroPharma’s business generally. These risks and uncertainties, and others, that relate to FluoroPharma’s business and financial condition are detailed from time to time in FluoroPharma’s Securities and Exchange Commission filings. These forward-looking statements are made only as of the date indicated, and FluoroPharma disclaims any obligation to update or revise the information contained in any forward-looking statements, whether as a result of new information, future events or otherwise.
Experienced Management Team and Advisors

**Thomas H. Tulip, Ph.D.** President and CEO

- Healthcare executive with >30 years medical industry experience
- Former Executive at Navidea, Alseres, Lantheus and Bristol-Myers Squibb
- Development, commercialization and internationalization of Cardiolite

**Edward L. Lyons, Jr.** Vice President, Development

- Healthcare professional with >25 years nuclear cardiology experience
- Led the nuclear cardiology portfolio at GE Healthcare
- Led clinical development, marketing and medical affairs at DuPont Pharma, Bristol-Myers Squibb and GE Healthcare

**Scientific Advisory Board**

**H. William Strauss, MD**
- Pioneer of Cardiac Nuclear Medicine; Attending Physician Emeritus of Molecular Imaging at Memorial Sloan Kettering Cancer Center, New York

**Gary Heller, MD, PhD**
- Morristown Medical Center; Past President of the American Society of Nuclear Cardiology, Fellow of the American College of Cardiology

**Manuel Cerqueira, MD**
- Director of Molecular Imaging, Cleveland Clinic

**Heinrich Schelbert, MD**
- Professor of Molecular & Medical Pharmacology, UCLA School of Medicine

www.FluoroPharma.com
Imaging Agent
Success Case Study

NUCLEAR CARDIOLOGY
**Nuclear Cardiology: Dramatic Growth**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>1990</td>
<td>1 Million US Blood Flow Studies</td>
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</table>
| 1991 | Cardiolite introduced  
  • Tc-99m SPECT* agent |
| 2005 | 8 Million US Blood Flow Studies  
  • Tc-99m agent US end-user revenue: $1.3B  
  ~ $70/dose |

*Nuclear Perfusion Studies 1996-2005*

*SPECT=Single Photon Computed Tomography*
Nuclear Cardiology: What’s Changed?

- Patients and symptoms:
  - Diabetes, Obesity, Women, Heart Failure

- 40% of today’s patients underserved by SPECT technology

- New generation of heart imaging agents needed:
  - Higher resolution, quantifiable, less prone to misleading artifacts
  - Focused on more than just blood flow:
    - Metabolism, viability, cellular dynamics
  - Lower radiation doses
## PET Can Provide Better Answers

<table>
<thead>
<tr>
<th>Higher resolution</th>
<th>Lower radiation exposure</th>
<th>Established Supply Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Easier to interpret</td>
<td>• Patients and staff</td>
<td>• More than 100 distribution centers and 3000 PET cameras</td>
</tr>
<tr>
<td>• Older agent artifacts eliminated</td>
<td></td>
<td></td>
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<tr>
<td>• More readily quantifiable images</td>
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**Result:**
High diagnostic and prognostic accuracy

**Improved outcomes:**
Patient Health & Economic

**Easy, secure access to doses and camera time**
Molecular Imaging Allows 3D Imaging and Quantification
Nuclear Cardiology

PERFUSION AND BEYOND
Cardiovascular Disease; Major Global Health Burden

Key facts – US and WW

- WHO: “Neglected Global Epidemic”
  - 16.7 M deaths WW: 1/3 of all deaths, 78% from low/middle income countries.
  - 1/3 of deaths in China, ½ in Europe
  - 2.4M deaths in US: top cause (38.5%)

Key unmet needs

- Get closer to the disease source – Early detection
- Appropriate treatment selection to manage escalating costs

Blood Chemistry

High Blood Pressure

Coronary Artery Disease (CAD)

Stable Angina

Acute Myocardial Infarction (MI)

Malignant Arrhythmias (SCD)

Congestive Heart Failure (CHF)

Congenital Heart Disease

Death
Heart Failure Reaching Epidemic Proportions

- The average life expectancy after HF diagnosis is 8 years, but 50% die within 5
- HF prevalence is expected to increase 46% from 2012 to 2030
- Total US cost in 2012 was $31 B
- Pacemaker rates rising dramatically
- Hospitalization rates increasing in patients under 65 YoA

Percent change in congestive heart failure hospitalization rates, by sex and age: United states, 2000 to 2010

† Change from 2000 to 2010 was statistically significant at the 0.05 level using a weighted least squares regression method to measure linear trends over time. Data for every year were included in this test

Source: CDC/NCHS, national hospital discharge survey, 2000-2010
Mozaffarian et al., Circulation 2016

Pacemaker Placements

- Carotid sinus syncope
- After ablation
- Complete AV block
- AV block unspecified
- Mobitz II AV block
- Other second-degree AV block
- Sinus node dysfunction

HF Cost, US

Source: CDC/NCHS, national hospital discharge survey, 2000-2010
Mozaffarian et al., Circulation 2016
• Appropriate therapeutics aimed to prevent and best treat disease related to diabetes, obesity and heart disease hold greatest promise
• Pharmaceuticals enabling personalized, outcomes-driven medicine offer best route to reducing the overall costs of healthcare

Medical Concerns that Present Best Targets for Healthcare Cost Reduction*

- Diabetes: 35%
- Obesity: 29%
- Heart disease: 20%
- Mental health: 5%
- Chronic lung disease: 4%
- End-stage renal disease: 3%
- Cancer: 2%
- Alzheimer’s disease: 1%
- Stroke: 1%

Base = 289
Drivers of Referrals to Cardiac PET

Drivers and Benefits

A. Lowers Radiation Dose
   • With improved diagnostic accuracy

B. Allows fusion of anatomical and biochemical studies
   • Superior image quality
   • Improved quantification

C. Enables more precise approach for patients…the best test to achieve diagnostic significance

Improved Patient Management - SPECT vs.PET PET enables decrease in costly downstream catheterizations & revascularizations

Source: Merhige et al. JNM 2007; 48:1068
New Guidance for PET Imagers

Important Properties of Myocardial Perfusion PET:

1. High diagnostic accuracy
2. Consistent high image quality
3. Low radiation exposure
4. Short protocols
5. Quantification of blood flow
6. Strong prognostic power

Clinical Indications:

1. Preferred test for patients unable to exercise
2. Recommended test for patients with active CAD, plus 1 or more of:
   a) Prior poor quality study
   b) Body characteristics like obesity
   c) High-risk patients
   d) Young patients with established CAD
   e) Blood flow is a needed adjunct

PACIFIC - FIRST HEAD-TO-HEAD COMPARISON OF NON-INvasive CORONARY ARTERY IMAGING

29 AUG 2016

Topic(s): Non-Invasive Imaging;

Rome, Italy – 29 August, 2016: For patients presenting for the first time with suspected coronary artery disease (CAD) clinicians have had a number of non-invasive diagnostic tests to choose from, but little evidence for which is best.

Now, findings from the PACIFIC trial may offer some guidance.

Comparing results of these non-invasive results to the gold standard results, investigators showed that PET was significantly more accurate (85%) for diagnosing coronary ischemia as compared to CCTA (74%, P<0.01) and SPECT (77%, P < 0.01).

“The results will definitely spark further research. There is always a lot of discussion whether we need to choose SPECT or PET as the initial functional test for our patients. I think that we need to invest more in clinical PET imaging, which will be future. It is more convenient for patients in terms of time, accuracy and radiation dose.”

VU University Medical Center, Amsterdam
Nuclear Cardiology Beyond Blood Flow

CardioPET and BFPET
## FPMI Development Portfolio

<table>
<thead>
<tr>
<th>CardioPET (¹⁸F FCPHA)</th>
<th>BFPET (¹⁸F FTPP)</th>
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<tbody>
<tr>
<td><strong>For assessment of patients with chronic Coronary Artery Disease (CAD) and metabolic disorders</strong></td>
<td><strong>Potential to measure both blood flow and regional cardiac electrical integrity</strong></td>
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<tr>
<td>• 19 million potential patients</td>
<td>• 12 million potential procedures</td>
</tr>
<tr>
<td>• Modified fatty acid designed to enable metabolic imaging</td>
<td>• For use in combination with stress-testing in patients with presumptive chronic CAD</td>
</tr>
<tr>
<td>• Detects regions of fatty acid uptake with CAD</td>
<td>• To replace SPECT in institutions with PET capability</td>
</tr>
<tr>
<td>• Phase 1 (US)</td>
<td>• Phase 1 (US)</td>
</tr>
<tr>
<td>• Phase 2A (Europe; recruitment complete)</td>
<td>• Phase 2A (US) planned 2016-2017</td>
</tr>
<tr>
<td>• Phase 2B (US) planned 2016-2017</td>
<td>• U.S. patent through 2025</td>
</tr>
<tr>
<td>• U.S. patent through 2025</td>
<td><strong>Perfusion images</strong></td>
</tr>
</tbody>
</table>

**3D Images from CAD subject**

![3D Images from CAD subject](image1)

![Perfusion images](image2)
CardioPET (18-F FCPHA) Results

Fatty acid analog that detects regions of metabolic insufficiency

PHASE I TRIAL COMPLETED – Incl. 6 CAD pts
Results:
• CardioPET promising safety with no AEs detected
• Clinical findings consistent with SPECT
• Quality of CardioPET images visually superior to SPECT

PHASE II TRIAL: RESULTS
• Well tolerated, no AE’s related to study drug
• CardioPET images were of superior quality vs. SPECT
• CardioPET images were diagnostically comparable to SPECT
• CardioPET resting studies identified CAD without exercise in certain subjects

15 minute scan identifies infarcted tissue and peri-infarct ischemia in a patient with previous MI
Comparison of Image Quality, PET early (10 min) and late (50min) with Rest and Stress SPECT: Excellent/Good and Fair/Poor

p = < .01 for PET vs. SPECT

ASNC 21st Annual Meeting, September 24, 2016
CardioPET Phase II Image Analysis

Result = False Positive SPECT

Example: Normal CardioPET
59 year old female patient with typical angina, hypertension
Angiogram = no CAD

Exercise Tc-99m SPECT

Early
Late

Exercise PET

Result = Resting CardioPET positive for CAD

04-004
48 y/o M, DM, HTN, lipids, NYHA II
70% RCA, 30% LCx, 15% LAD

Stress Tc-99m
Rest Tc-99m

Rest PET Early
Rest PET Late
Fatty Acid Metabolism: The Intersection of Diabetes and Heart Failure

Identify metabolic profile

- Diabetes and obesity: ↑ FA delivery
- Heart failure: Impaired FA oxidation

- ↑ PPARα activity
- ↑ MHC-β
- ↑ TNF-α

Contractile dysfunction
Cardiac remodeling

Intramyocardial lipid overload

Medically modulate FA and glucose oxidation

© Current Medicine Group
CardioPET Summary

- CardioPET is a modified fatty acid analog that targets the heart’s primary energy source.
- CardioPET has completed Phase I (US) and a Phase II study (Europe) with no serious adverse events.
- Images from Phase II demonstrate excellent image quality in comparison to Tc-99m SPECT.
- Phase II images indicate relative agreement with Tc-99m SPECT for the presence and location of ischemia, with evidence of coronary disease at rest in certain subjects.
- Additional clinical studies in the US are planned to unlock additional applications for fatty acid imaging.
BFPET

Nuclear Cardiology Beyond Blood Flow
• Tetraphenylphosphonium salts penetrate the hydrophobic barriers of mitochondria

• Recognized markers of mitochondrial membrane electric and kinetic potential

• Mitochondrial damage contributes to a wide range of diseases; including cancers, diabetes, degenerative diseases, and the pathophysiology of aging

• First proposed as tumor markers due to high mitochondrial membrane potential in tumor cells versus normal epithelial cells

Min et al, JNM 2004;45:636
BFPET: Preliminary Results

Lipophilic compound that tracks coronary blood flow and cell membrane integrity

Phase I trial completed (12 Normal Healthy Volunteers)
- 6/12 whole body scans/dosimetry
- No adverse events
- Rapid extraction, stable heart uptake

Phase II trial: initiated
- To evaluate diagnostic performance in suspected coronary disease; evaluate potential for EP applications
- Primary site opened for recruitment
- Additional clinical site recruitment ongoing

BFPET/CT fusion images in a 60-year old female subject at 30 minutes after injection
BFPET images demonstrated **higher resolution** than SPECT

On SPECT this patient appeared to have a defect...

...while BFPET clearly showed that patient’s myocardium was healthy

Source: Results of investigator-sponsored trial at PLA 301 Hospital in Beijing, China.
FTPP: A Mitochondrial Membrane Marker

\[ \Delta \psi_p \quad 30-60 \text{ mV} \]

\[ 5-10 \times \]

\[ \Delta \psi_m \quad 150-180 \text{ mV} \]

\[ 100-500 \times \]
Objective:
Describe a new non-invasive method to quantitatively measure and image myocardial membrane potential

Methods:
3 pigs; 2 normal and 1 with experimentally-induced infarct were studied with dynamic PET imaging. The total volume ($V_T$) of 18-F FTPP was measured in voxels by the indicator dilution principle and Logan transformation.

Results:
A novel equation was derived to express total volume versus membrane potential, as both methods were quantitatively similar. Membrane potential was 140-160 mV for healthy tissue and 40-70 mV in infarcted tissue.

Conclusion:
Confirms the feasibility of quantitative mapping. The results raise the potential for clinical translation as a non-invasive adjunct to invasive electroanatomic mapping.
BFPET Summary

• BFPET is a lipophilic cation that could potentially be useful in the detection of ischemia
• BFPET is poised to begin Phase II clinical studies in the US in comparison to Tc-99m SPECT
• BFPET’s mechanism of action could also enable it to map mitochondrial (and therefore electrical) integrity of the myocardium non-invasively and quantitatively
• This application could be a useful adjunct in patients receiving MPI for ischemic disease and LV synchrony assessment in HF
• Fluoropharma plans to enter additional Phase 2 human validation in 2016 & 2017
LETTER OF INTENT TO MERGE

With Ground Fluor Pharma
We believe that a merger of FluoroPharma Medical Inc. and Ground Fluor Pharma, with three low risk, 1st- and best-in-class advanced imaging assets primed for success in the established, multi-billion dollar cardiovascular and oncology imaging markets, would represent a very attractive investment opportunity.
A combination of Fluoro Pharma Medical, Inc. (FPMI) and Ground Floor Pharma (GFP) which would produce a vibrant new entry in the rapidly advancing, Positron Emission Tomography (PET) space. This entity would feature:

- An **enabling platform technology** (SWIFT) focused on a central need in the industrialization of next generation PET imaging biomarkers, with **immediate revenues from licensing**
- **Revenue** from sales of otherwise difficult to produce reagents,
- A **Phase 3-ready imaging drug** with positive FDA guidance and the ability to reach the market in an area of high value, unmet need with expected **revenue within two years**
- Breakthrough **cardiovascular** imaging agents which promise to revolutionize assessment of today’s evolving heart disease patients, a **multibillion dollar market opportunity**
NEWCO Portfolio Summary - GFP

• **Platform** $^{18}$F- production technology
  • Long lasting, world wide IP from U. of Nebraska and MGH

• mFBG
  • Superior to current standard of care - $500M US opportunity
  • Pioneer Orphan indication for Pediatric Neuroblastoma
  • Favorable FDA attention : Expedited development and review
  • Revenue expected in 2 years
  • Cardiovascular indication (Heart Failure) –Device implications

• F-DOPA
  • Proven biomarker for Parkinson’s Disease, Lewy Body Dementia, Glioblastoma
  • Previously too expensive to produce
  • Reagent revenues
  • Opportunity for literature NDA
$^{18}$F-mFBG

(meta-Fluorobenzylguanidine)

From Ground Fluor Pharma
• Analog of norepinephrine (NE); targets neuroendocrine tumors and the norepinephrine transport mechanism (NET)

• Early success in Phase I/II human studies

• Improved imaging agent for orphan indication
  – Commercial revenues within 2 years

• Follow-on re-purposing to large unmet need in cardiology provides significant growth potential
• Orphan Drug Status
  • Pediatric Neuroblastoma
  • Favorable attention
  • Expedited review
  • Fees waived

• Favorable attention
  • Acceptance of much of mIBG data as applicable
  • Limited number of patients for pivotal study

• Result: expected approval 4Q18
Developing mFBG for Cardiology

A significant opportunity
Assessment of Cardiac Innervation

NE plays a critical role in cardiac autonomic function

High levels of circulating NE have long been associated with poor survival in heart failure

Impaired NET in HF prevents reuptake of circulating NE

Cohn et al, NEJM 1984: 311 Shannon et al NEJM V.342:8
Scope of the Problem:

- ~100,000 ICD’s are implanted in the US annually
- <50% of devices never “fire” before battery replacement at 5-7 years
- No benefit for death from pump failure

Opportunity:

- Innervation imaging can identify the 30-35% of patients who will not benefit from an ICD
- Payers would like to identify ways to reduce “ineffective” use
- Elimination of unnecessary ICD’s by 30% could save $1 billion or more per year
Why Focus on Heart Disease?

1 in 3  
...People will die of heart disease

Every 34 seconds  
...A new heart attack occurs

Every 3 seconds  
...A cardiac perfusion scan is performed
• Breakout proprietary Oncology, Neurology and Cardiovascular imaging technologies

• Low risk in many dimensions: Technical, Regulatory, Execution, Commercial

• Short study timelines/regulatory pathway

• Immediate revenue stream from platform technology

• Potential to improve diagnosis and reduce system costs in large populations

• Well-established worldwide IP

• Multi-billion dollar, preconditioned markets; “Companion Device” potential

• Proven, experienced management team
Molecular Imaging to Enhance Patient Outcomes in Cardiovascular Disease