



## Investor Presentation

January 2012

TSX: MDG

# Forward-Looking Statements and Disclaimers

- All statements, other than statements of historical facts, included in this presentation regarding our strategy, future operations, financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. The words “believe”, “anticipate”, “estimate”, “plan”, “expect”, “intend”, “may”, “project”, “will”, “would” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated or implied by forward-looking statements, including the factors discussed under “Risk Factors” and in other sections of the prospectus. These factors and the other cautionary statements made in the prospectus should be read as being applicable to all related forward-looking statements wherever they appear in this presentation.
- Our statements of “belief” in respect of our product and partner product candidates are based primarily upon our results derived to date from our research and development program. We believe that we have a reasonable scientific basis upon which we have made such statements. It is not possible, however, to predict, based upon studies in vitro and animal studies whether a new therapeutic agent or technology will be proved to be safe and/or effective in humans. We cannot assure that the particular results expected by us will occur.
- Any forward-looking statements and statements of “belief” represent our estimates only as of the date of the prospectus and should not be relied upon as representing our estimates as of any subsequent date. Except as required by law, we do not assume any obligation to update any forward looking statements or statements of “belief”. We disclaim any intention or obligation to update or revise any forward-looking statements or statements of “belief”, whether as a result of new information, future events or otherwise.
- Nothing herein should be construed as an Offering of securities of the Company.

## Why Medicago - Key Points

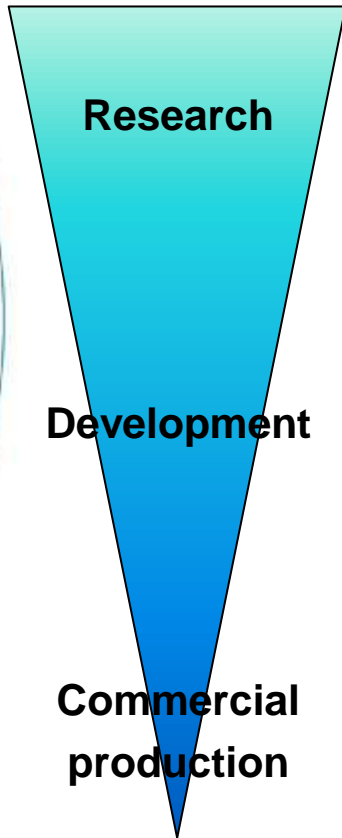
- Disruptive technology ; Rapid, cost-effective and easily scalable manufacturing solution
- Advanced robust data; Positive Phase II data on pandemic flu vaccine & positive U.S. Phase I data on seasonal flu vaccine
- Differentiable advantages for Seasonal and Pandemic Influenza
- Strongly competitive COGS & Capex
- Successful International Development Strategy with near-term commercial opportunities

# medicaGO Company Overview

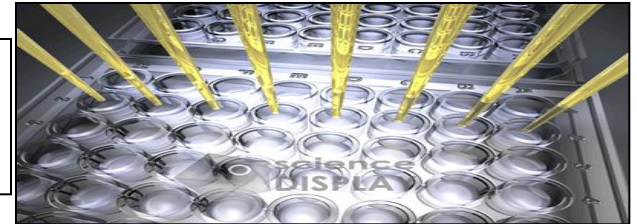
|                                |   |
|--------------------------------|---|
| Focus                          | Vaccines / BioSimilar   |
| Manufacturing technology       | Transient expression in Tobacco   |
| Vaccine technology             | Virus-like particles  |
| Discovery platform             | VLPEXpress  |
| Headquarters & cGMP facilities | Quebec City, Canada<br>Research Triangle Park, NC, USA  |
| Product pipeline               | Pandemic Flu H5 - Phase II Canada - complete<br>Pandemic Flu H5 - Phase I USA - DARPA/IDRI<br>Seasonal influenza - Phase I USA - complete<br>Non-influenza VLPs and Biosimilars - R&D |
| Agreements                     | DARPA Award - US\$21M<br>PATH Grant - Influenza<br>IDRI - Phase I H5 new adjuvant , intradermal<br>Pharma & U.S. Army - Vaccines outside of flu                                       |



# Integrated Discovery, Advanced Development and Manufacturing Technologies



**HTP Discovery platforms  
VLPEXpress  
GlycoPlus**



**100 constructs in 10 weeks from sequence to mg purified quantity**

**cGMP Pilot clinical scale**



**cGMP lots for preclinical to phase II**

**cGMP large scale  
Pandemic, seasonal flu  
and other vaccines**

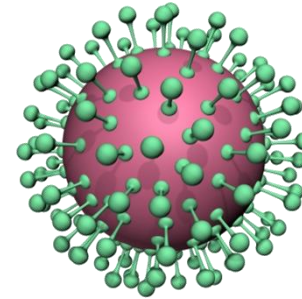


**120M doses per year**

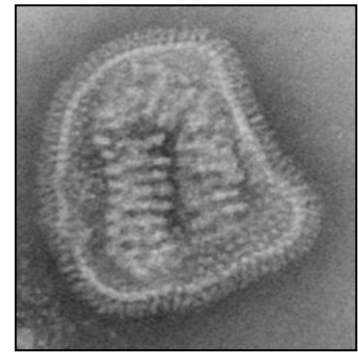
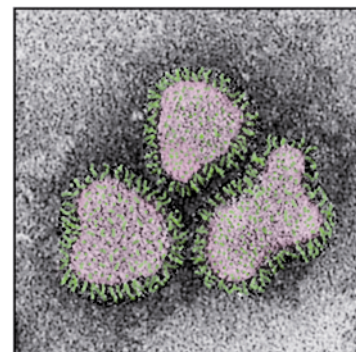
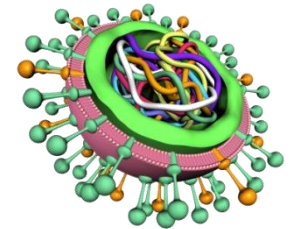
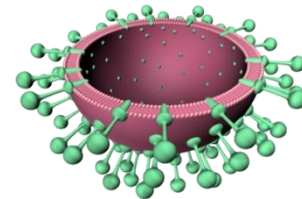
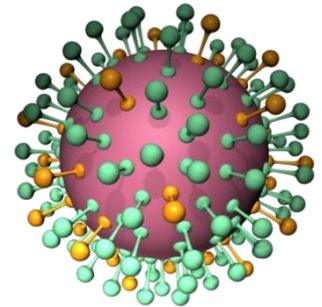
# Characteristics of the Plant-Made VLP Vaccine

- Influenza virus-like particles in plants using only one viral gene (Hemagglutinin)
- No possibility of viral replication
- The VLP vaccine presents wild-type HA in an immunologically-relevant array as a membrane-bound protein

Medicago VLP



Influenza virus



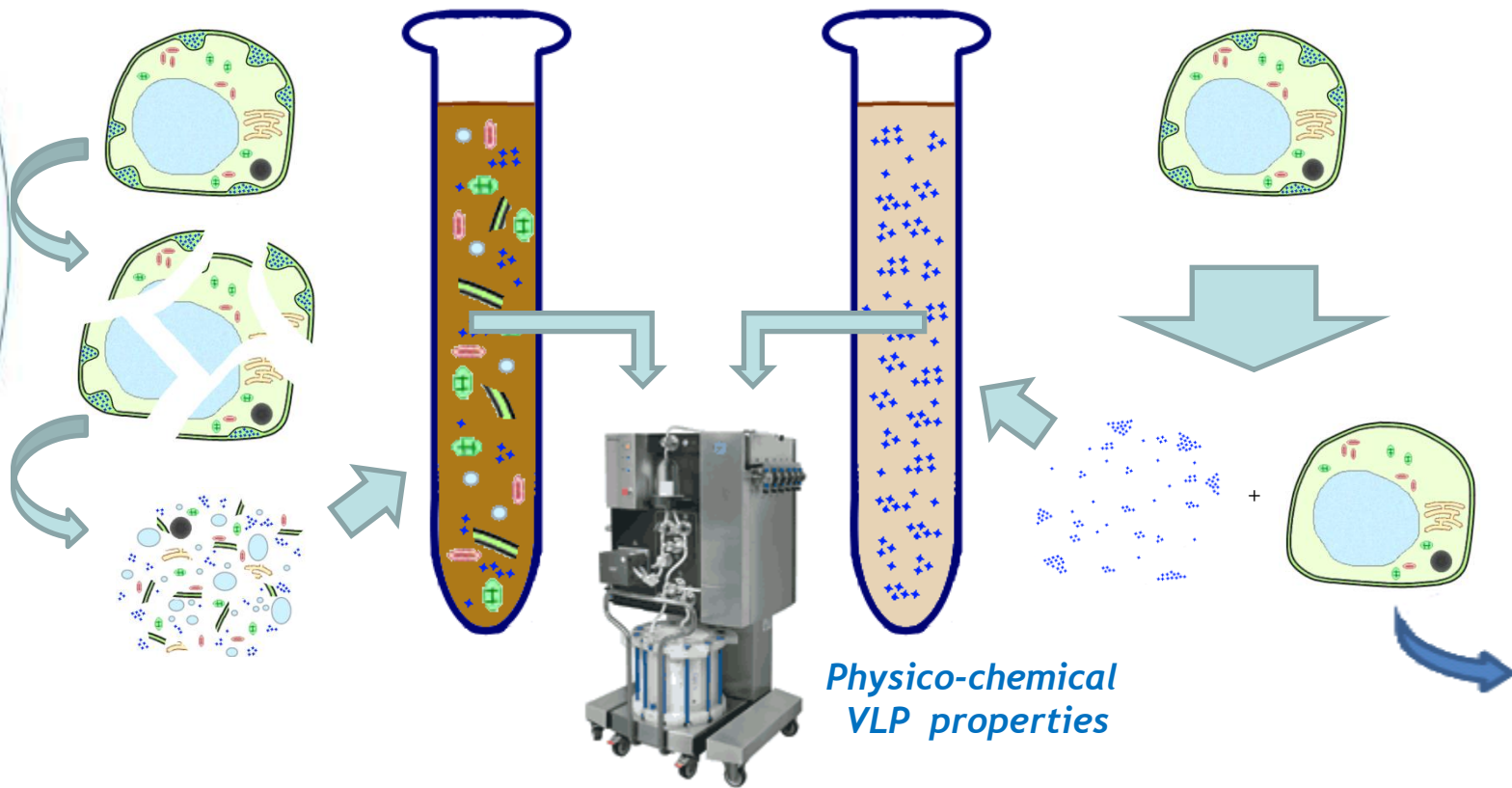
# Extraction Process

Biochemical treatment vs. Mechanical disruption

Led to New IP; yield improvements and a generic process

## Mechanical disruption

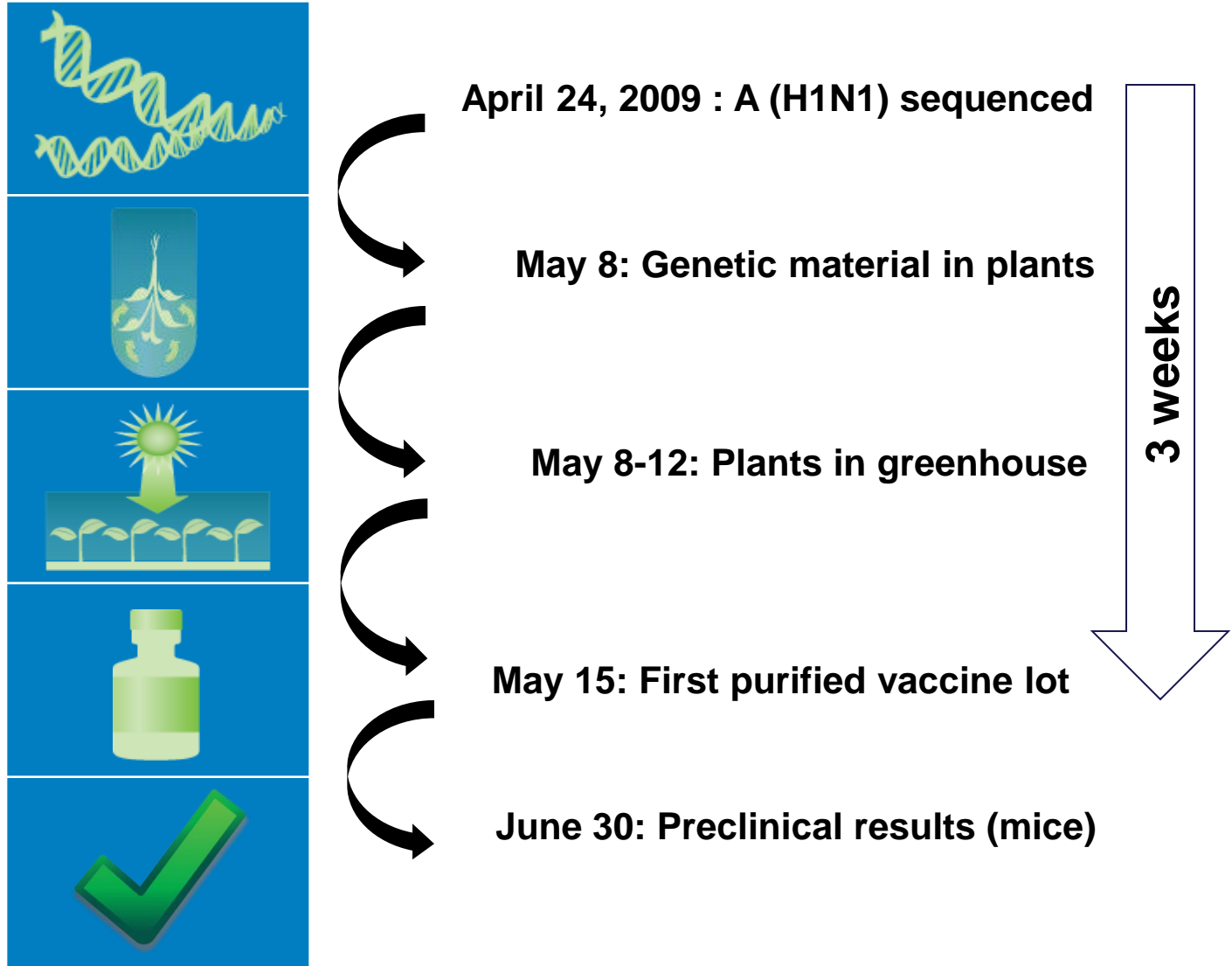
## Biochemical treatment



**Chromatographic  
Purification**

*Physico-chemical  
VLP properties*

## Medicago's Solution: First Responder



## Advantages of Medicago's Technology for Seasonal Influenza Market

- Speed in producing 3<sup>rd</sup> strain for annual vaccine:
  - Ensures fastest possible time to market
- Potential Cross-protection against different strains (antibody & CMI response)
- Potential stronger protection in the elderly and other age groups
- COGS highly competitive to older technologies

# Competitive Capital and COGS

## Capital Expenditure

- Medicago U.S. facility capex of \$35M to produce 40M doses of seasonal influenza
- 10 to 15x less than Egg based
- Greater than 15 x for cell culture

## Cost of Goods

- For both seasonal and pandemic Influenza lower than egg based and cell culture
- Industry expert performed independent analysis and verified COGS model

# Medicago USA: \$21M Funding Award from DARPA

- Based in the Research Triangle Park, North Carolina
  - 120M doses pandemic or 40M seasonal vaccine per year (15ug doses)
  - 12 months to build - \$35M
  - 97,000 square feet (27,000 square feet greenhouse)
  - Fewer than 100 people
  - 15,000 plants/batch, 300 kg biomass/batch
  - Designed as a multi-product facility
- \$21M in funding from US Department of Defense (DARPA)
  - First goal: produce 10M doses of H1 VLP in one month



## Key Results: Phase 2 (parts A & B) of H5 VLP (pandemic)

- The plant-made H5 VLP vaccine is well tolerated at all tested doses
  - Most AEs were mild and of short duration
  - No onset of allergic reactions after vaccination
- No benefit of the adjuvanted 30 and 45 $\mu$ g doses compared to the lowest 20  $\mu$ g dose
- Subjects enrolled according to 4 age groups: 18-29, 30-38, 40-49, 50-60 years of age
  - No statistical difference between age groups
- The H5N1 vaccine has been tested in over 200 healthy volunteers to date, none of which have experienced any serious adverse reactions.

# Comparative Data for H5N1 Avian Flu Vaccines

| Product                              | Platform                          | Dosage (ug) | Seroconversion            | Seroprotection            |
|--------------------------------------|-----------------------------------|-------------|---------------------------|---------------------------|
| <b>Medicago - PII</b><br>18-60 years | VLPs in plants                    | 2x20+alum   | 50%                       | 50%                       |
| PI/II Company<br>18-45 years         | Rec HA in insect cells            | 2X45+alum   | 8%<br>(22% without alum)  | Not reported              |
| PI/II Company<br>18-45 years         | Whole inactivated in cell culture | 2x30+alum   | 36%<br>(26%without alum)  | 34%<br>(26% without alum) |
| PI/II Company<br>18-49 years         | Subvirion inactivated in eggs     | 2x45+alum   | 33%<br>(25% without Alum) | 14%<br>(12% without Alum) |
| PII Company<br>18-40 years           | VLPs in insect cells              | 2x90        | 63%                       | 63%                       |

# Study Outline for Phase 1 - Seasonal Program

- Design
  - 100 subjects randomized to receive a single dose of 5, 13 or 28  $\mu\text{g}$  of the H1 VLP vaccine, or 45  $\mu\text{g}$  or placebo (formulation buffer)
- Primary outcome
  - Safety and tolerability of a single non-adjuvanted dose
  - Immunogenicity of the H1 VLP vaccine compared to placebo
- Studied population
  - Healthy adults 18-49 years of age
- Immunogenicity
  - HI and MN antibody titers for reassortant and wild-type strains

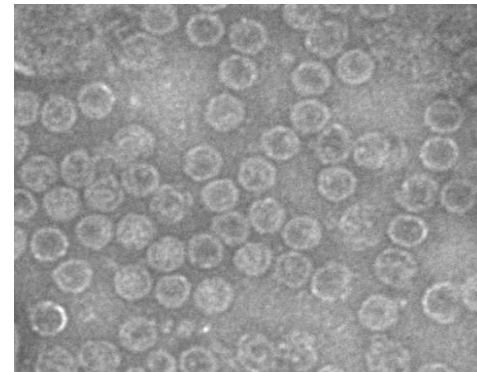
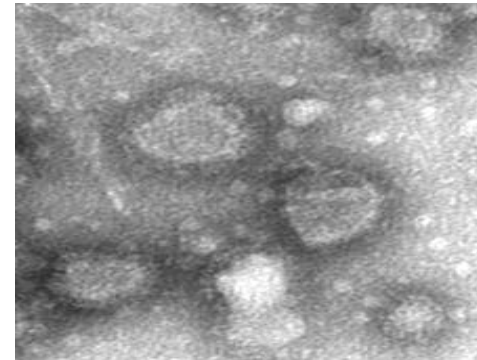
## Main Findings of Phase 1 - Seasonal Program

- VLP vaccine was well-tolerated at all doses
- Strong immunogenicity for all tested VLP doses
- 5 µg dose satisfies all three CHMP criteria
- No statistical difference with comparator
- Early data suggests that some subjects have cellular responses to VLP vaccination

## Broadening the Applications of the Manufacturing and Vaccine Platforms

- VLP of enveloped viruses

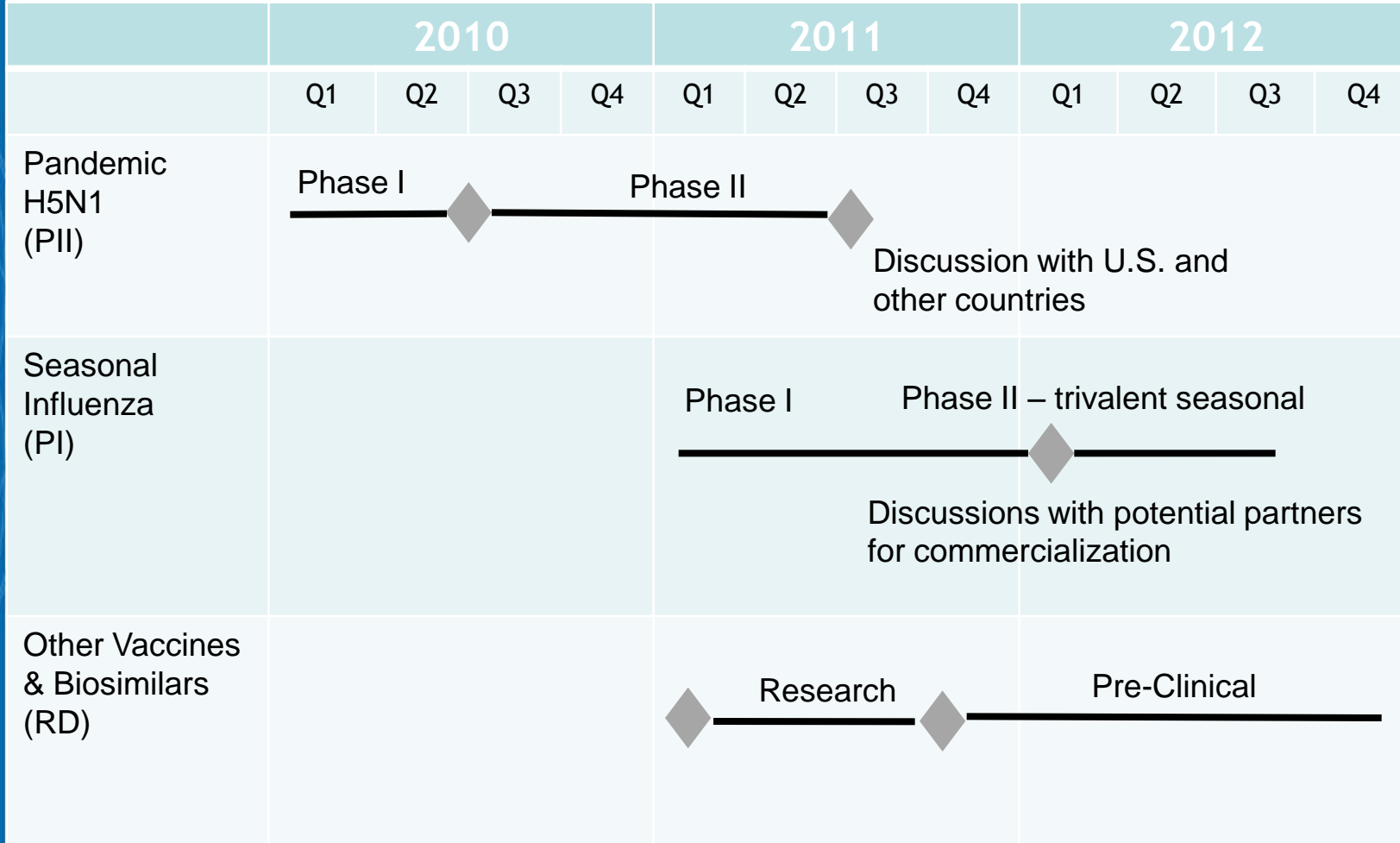
- RSV
- Varicella
- **Rabies**
- Measles
- HIV
- Dengue
- Chikungunya
- **Ebola**
- SARS...



- Other VLPs

- Non-enveloped viruses
- Bacterial antigens, cancer antigens...

# Timelines for Internal Pipeline



## Collaboration with Partners

### TOP 10 GLOBAL PHARMA

- Non-influenza VLP vaccine candidate
- Successfully completed the first stage
- Second stage underway

### U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES (USAMRIID)

- VLP vaccine candidate for the prevention of Ebola

### INFECTIONS DISEASE RESEARCH INSTITUTE (IDRI)

- One dose H5N1 vaccine with new adjuvant
- Pre-clinical work completed
- Phase I in Q1 of 2012 (paid and managed by IDRI)

### PATH

- Broad coverage influenza vaccine

## Potential Upcoming Milestones

| Milestone   | Expected Date |
|---|---------------|
| DARPA milestone # 4   | Q1 2012       |
| Potential contracts (government, pharmaceutical companies)            | H1 2012       |
| Announcement of new pipeline candidates                               | H1 2012       |
| Initiate U.S. Phase II clinical trial with trivalent seasonal vaccine | Q1 2012       |
| DARPA milestone # 5   | H1 2012       |
| Interim Phase II clinical data - seasonal influenza vaccine           | Q3 2012       |
| Initiation of Phase I - One dose H5N1 with new adjuvant               | Q2 2012       |
| Interim Phase I clinical data - One dose H5N1 with new adjuvant       | H2 2012       |

## Financial Summary

|                                    |  |
|------------------------------------|--|
| Public since                       | August 2006  |
| Stock listing                      | TSX : MDG  |
| Recent share price                 | \$0.61   |
| 52 week hi-low                     | \$0.74 - \$0.45  |
| Shares outstanding (Basic / F.D.)  | 247M / 283M  |
| Market cap (approx.)               | \$150M   |
| Avg. daily volume (last 12 months) | 170,000 shares   |
| Share ownership                    | PMI 40%<br>Top 50 pharma 6%<br>FSTQ 5%<br>Agechem 5%<br>AGF/Acuity 2%<br>CTI Life Sciences 2%<br>Management & BOD 2% |
| Cash on hand (September 30)        | \$28.1M + \$22.5M (received from PMI)  |

# Management

|   |  |
|---|--|
| <p><b>Mr. Andy Sheldon,</b><br/>President and CEO</p>                 | <p>20 years managerial experience in the vaccine sector including approval of new products and signing of pandemic plan Shire Biologics, Biochem Pharma, Institut Mérieux, Smithkline Beecham, Ayerst-Wyeth</p>    |
| <p><b>Dr. Louis-Philippe Vézina,</b><br/>Chief Scientific Officer</p> | <p>20 years experience in research in agronomy, molecular biology and protein production Laval University, Agriculture &amp; AgriFood Canada</p>   |
| <p><b>Mr. Pierre Labbé,</b><br/>Chief Financial Officer</p>           | <p>20 years of financial experience in public and private companies: Virginia Mines (TSX:VGQ), Sequoia Minerals Inc. and Mazarin Inc. (TSX-V:MAZ.H), Agrinove, and agrifood cooperative, Coopers &amp; Lybrand</p> |
| <p><b>Mr. Mike Wanner,</b><br/>VP US operations</p>                   | <p>Former president and chief executive officer of Abeome, former chief financial officer for Merial and Rhone Merieux Inc. in the United States.</p>  |
| <p><b>Ms. Irene Clement,</b><br/>Acting VP Regulatory Affairs</p>     | <p>27 years experience in the biotech industry at Sanofi-Pasteur, Shire Biologics, ID Biomedical, GSK; obtained &amp; maintained several licenses (30 products in 70 countries)</p>                                |
| <p><b>Ms. Nathalie Landry,</b><br/>VP Product Development</p>         | <p>20 years of experience in the biotech industry. Previous experience in a biotech company holding various positions in R &amp; D and product development.</p>  |
| <p><b>Ms. Brigitte Barbeau,</b><br/>VP Manufacturing</p>              | <p>20 years experience in QA/QC in commercial production of influenza vaccines GSK Biologicals, ID Biomedical, Shire Biologics</p>   |
| <p><b>Mr. Frederic Ors,</b><br/>VP Business Development</p>           | <p>11 years experience in biotech business development, IP management, and licensing in Europe and North America</p>   |

# Board of Directors & Scientific Advisory Board

## Board of Directors

|                          |   |
|--------------------------|---|
| Randal Chase<br>Chairman | Former President, Shire Biologics, Aventis Pasteur<br>Former Director of Acambis (London and NASDAQ) and BioJect (NASDAQ)       |
| Pierre Des Marais II     | Former board member: Rothmans, Imperial Oil, RBC, Sleeman Breweries, CN Railways, Carling O'Keefe, Canadair and Air Canada      |
| Jonathan Goodman         | President and Chief Executive Officer, Paladin Labs Inc.  |
| Pierre Seccareccia       | Corporate Director<br>Former President PricewaterhouseCoopers, Montreal   |
| Pierre Marc Johnson      | Lawyer, physician, former Premier of Quebec . Sits on boards of ACE Aviation Holdings Corporation, Air Canada and Holcim Canada |
| Andy Sheldon             | CEO - Medicago Inc<br>Former VP Sale & Marketing Shire Biologics (NASDAQ)   |
| Louis Vézina             | CSO - Medicago Inc.   |

## Scientific Advisory Board

|                         |   |
|-------------------------|---|
| Dr. Myron Levine        | University of Maryland School of Medicine, USA  |
| Dr. Cecil Czerkinsky    | Director International Vaccine Institute, South Korea)  |
| Dr. Ron Ellis           | VP and CTO NasVax, Israel   |
| Dr. Alf Lindberg        | Noble Foundation, Sweden  |
| Dr. Brian Ward          | Infectious diseases, McGill University  |
| Mr. Paul Marshall       | Senior VP Operations and Quality, Amylin Pharmaceuticals  |
| Dr. Harold Rode         | President and Chief Consultant, Rode Biologics Consulting and former head of the Canadian Pandemic Division, BGTD |
| Mr. Thomas C. Ransohoff | VP and Senior Consultant, BioProcess Technology Consultants   |

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**<http://www.medicago.com>**