Bringing precision to medical cannabis
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About us

- Canonic is a fully owned subsidiary of Evogene Ltd* targeted to develop medical grade cannabis through a revolutionary approach utilizing disruptive genomic, big data and artificial intelligence technological platform

- Focused on improving yield and metabolite stability, and cannabis varieties for the main medical indications: PTSD, severe chronic pain and cancer

- Harnessing more than 10 years of Evogene’s experience and reputation in plant genomics, including collaborations with international ag companies - Bayer, Corteva, Monsanto, Syngenta, and others

- Exclusive access to Evogene’s CPB platform technology, IP and infrastructure for its cannabis R&D program including regulatory approvals for the establishment of a cannabis research facility

*Evogene Ltd. – Publicly traded in TASE and NASDAQ (EVGN); Cash balance of > $50 Million (31/12/2018)
Agenda

Mission, Market & Challenges

Solution & Technology

Target Products & Business Plan

Assets & Capabilities

Summary
To develop and bring to market medical grade cannabis through a revolutionary genomic approach
The cannabis market

A fast growing market

Vast medical applications

Source: New frontier data (US only)

Source: Leafly Holdings
KEY CHALLENGES

METABOLITE YIELD
Low yields burden growers and patients with higher product and manufacturing costs.

VARIETY STABILITY
Substantial variations within varieties produce inconsistent products that have become unreliable as a medical treatment.

MEDICAL TAILORED PRODUCTS
Specific medical indications require tailored metabolite profiles. To date, breeding mainly pushed THC levels.

<table>
<thead>
<tr>
<th>Metabolite</th>
<th>Relative St Dev (%)</th>
<th>Potency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBD</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>THC</td>
<td>16.8</td>
<td></td>
</tr>
<tr>
<td>CBN</td>
<td>21.1</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>CBG</td>
<td>43.2</td>
<td></td>
</tr>
<tr>
<td>alpha-pinene</td>
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<td>elemene</td>
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<td>myrcene</td>
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$980 per pound Production cost
$1,869 Annual average expenditure of medical cannabis user
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Summary
Our solution

Using computational power (AI, Big Data) to decode the cannabis genome and overcome market challenges

**Current cannabis genetic mapping**

- THC gene
- CBD gene affected
- Essential gene

**Canonic: seeing the bigger picture**

- Essential genes
- CBD gene
- THC genes
- Proprietary high yield genes
Disruptive technology - the CPB Platform

Evogene’s Computational Predictive Biology (CPB) platform

Understand plant genetics

High quality data

Interconnected information hub

Artificial intelligence tools

Plant validation

Developed over >10 years

Collaborations over the years with:

And more...
Agenda

- Mission, Market & Challenges
- Solution & Technology
- Target Products & Business Plan
- Assets & Capabilities
- Summary
Target products

MetaYield⁺
- Increased METABOLITE YIELD

Precise⁺
- Tailored METABOLITE PROFILES
  - Precise⁺ Chronic pain
  - Precise⁺ PTSD
  - Precise⁺ Cancer care

Unican⁺
- Verified VARIETY STABILITY

Innovative products to address key market needs

- Cancer 5.9%
- PTSD 48.8%
- Severe Chronic Pain 33.4%
- All Other Conditions 11.9%

+ For illustration purposes
Canonic will develop elite cannabis varieties for commercialization of medical products directly or via partnerships.
Milestones roadmap

2019
- Establishment of R&D growing facility
- Complete two cannabis growth cycles
- Establish agronomic protocols
- Build cannabis core collection
- Establish initial cannabis database

2020
- First product trait demonstrated
- Complete three cannabis growth cycles
- Complete establishment of proprietary cannabis database
- Expand core collection of cannabis varieties

2021
- Finalize development of first improved variety
- Pre-commercial stage
- Seed increase to allow production
- Finalize formulation process
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Summary
Innovative technology implementation

Understand plant genetics
Select desired traits, avoid undesired effects

High quality data
Proprietary and public data, relevant for cannabis

Interconnected information hub
3*10^9 data points on 62 plant species

Artificial intelligence tools
Novel genes and markers discovery capabilities

Plant validation
Greenhouses, tissue culture, molecular lab, phenotyping, statistics

Validated & patented genes for traits of interest (e.g. trichomes density, growth rate, flowering time)
Proprietary advantage

**CLASSIC BREEDING**

- Proven success - up to 30% improvement in oat*

**ADVANTAGES**

- Fast & efficient
- Can target any gene
- Non GMO, non genome editing

**Computational assisted new breeding technology**

- Design genetics
- Modify varieties
- Selected genetic profile
- Validate variety

*In greenhouse*
KEY CHALLENGES

METABOLITE YIELD
Low yields burden growers and patients with higher product and manufacturing costs.

VARIETY STABILITY
Substantial variations within varieties produce inconsistent products that have become unreliable as a medical treatment.

MEDICAL TAILORED PRODUCTS
Specific medical indications require tailored metabolite profiles. To date, breeding mainly pushed THC levels.
Cannabis metabolites are produced in small hairs (trichromes). We have proprietary IP for trichrome enhancement

- Cannabis yield is determined by its trichome population
- Evogene has discovered genes for the improvement of trichomes density and/or length
- >15 genes exhibited a significant impact on trichome traits in model plant systems
- Most of the genes are under granted patents

Trichomes in cannabis

Improved trichomes in tomato
KEY CHALLENGES

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METABOLITE YIELD

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VARIETY STABILITY

MEDICAL TAILORED PRODUCTS
Assets & capabilities from Evogene: Variety stability example

**THE CHALLENGE**

Current medical products are unreliable due to large fluctuations in active compounds levels

- Underground breeding
- High genome heterogeneity
- Confusing varieties nomenclature

**THE SOLUTION**

Development of stable cannabis varieties using advanced plant genomics capabilities

- Advanced breeding - superior performance
- Homogenous genome
- Hybrid seeds

**Smart selection process – identify genotypes using computational tools**

Conducted by Evogene subsidiary on Castor
**Assets & capabilities from Evogene:**

**Variety stability example**

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**THE CHALLENGE**

*Current medical products are unreliable due to large fluctuations in active compounds levels*

---

**THE SOLUTION**

*Development of stable cannabis varieties using advanced plant genomics capabilities*

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**Smart selection process – identify genotypes using computational tools**

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*Conducted by Evogene subsidiary on Castor*
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Connecting specific metabolites to clinical indications for precision medical cannabis products

Assets & capabilities from Evogene: Metabolite profiles example

Input data

- Plant data
- Clinical data

Proprietary Algorithms

- Ontologies

Output

- Clinical indication
  - Metabolite
    - A
    - B
    - C
    - D
    - E
    - F
    - ...
  - I
  - II
  - III
  - IV
  - V
  - VI
  - ...

A machine learning approach

- BiomeMiner™

Novel insect control genes

Public data

- Genomic data
- Genomic data
- Genomic data

Connecting specific metabolites to clinical indications for precision medical cannabis products
The team

Chairman

Ofer Haviv
Evogene CEO and President

Management

Dr. Inbal Dangoor
R&D
Biotech Trait Manager, Ag seeds division
Evogene

PhD Plant science

Dr. Arnon Heyman
CEO
VP and GM Ag seeds division Evogene,
CTO BondX technologies

PhD Biotechnology, MBA

Ofir Hazut
Strategy & BD
Director of business development Evogene,
MElaw Pharma,
DiagnosticAid Medical,
PeriTech Pharma

MSc Neuroscience, MBA
Agenda

Mission, Market and Challenges

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Assets & Capabilities

Summary
Summary

• Canonic’s mission is to develop and bring to market medical grade cannabis through a revolutionary genomic approach

• The cannabis market is growing at a rapid pace, while the main market challenges are – yield, stability and tailored products for specific indications

• Harnessing more than 10 years of Evogene’s experience and reputation in plant genomics, including collaborations with international ag companies - Bayer, Corteva, Monsanto, Syngenta, and others

• Exclusive access to Evogene’s CPB platform technology, IP and infrastructure for its cannabis R&D program including regulatory approvals for the establishment of a cannabis research facility
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