Directional Genomic Hybridization (dGH™): Single Cell Structural Genomics

Strategic Partnering for Gene Editing and Undiagnosed Disease Markets

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The Unmet Need in Gene Editing: Discovery of Structural Errors

Regulatory Review for GT Products Incorporating GE

- Science-based approach
- Benefit-risk analysis
  - Potential to:
    - Correct or remove defective genes
    - Eliminate disease phenotype
    - Improve therapeutic effects
  - Risk of:
    - Off-target modifications in the genome
    - Genome instability caused by chromosomal translocations / rearrangements
    - Unknown long term outcomes from on- or off-target genome editing events or due to the delivery system (vector)

Editing Causes Errors:

For the promise of gene editing to be realized, there must be methods to measure and control these errors
dGH: Robust Measurement of Structural Variation

Discovery, detection and quantitation of structural errors and DNA mis-repair for therapeutic Gene Editing, Global Pharma, and Research Institutions
De Novo dGH

Proprietary Strand Specific Chromatid Paints measure structural variations from the reference genome.

Translocated Fragment

Inversion within Translocation!

Translocation Source

Inversion

2 Inversions
Two Sources of Gene Editing Errors

**Mis-edits:** Measurable by Sequencing

- Faulty edit + Accurate repair
- Edit and homologous site involvement
- Generally small changes

**Mis-repairs:** Only Measurable by dGH

- Repair of incorrect ends
- Edit, homologous and random site involvement
- Larger genomic changes
The identification and control of structural errors are key concerns of the FDA.

KromaTiD’s dGH is the only tool for measuring all types of structural errors:
- Pre-existing
- Process associated

dGH could be a gold standard test for therapeutic CRISPR quality control (QC).
Essential Use Cases for Clinical Gene Editing

**Quantitate** individual on-and off-target variations:
- Structural variation-based specifications
- **Reduce regulatory risk**
- Accelerate therapeutic gene editing programs to the market

dGH: Measuring structural variation in 1000’s of single cells
Structural Genomic-Based Specifications

- Mechanistic insights
- Quantitative assays (Regulator ready)
- Pre-existing variation prior to editing
- Genome-wide longitudinal monitoring after editing
dGH 2.0: High-Throughput, Whole Genome

1. Cell Prep
   - Optimized, automated handling

2. Hybridize
   - Whole Genome, Highest Res Coverage

3. Image
   - High Thru-put

4. Analyze
   - AI Image Analysis

High Res Structural Genomics for:
- Development
- Qualification
- Optimization
- Screening
- Control...

Standard, Commercially Available Equipment

$1/cell analyzed!
Automated Analysis v0.1

Image Optimized and Breakpoints Determined by KromaTiD Machine Learning Algorithms
dGH 2.0 Strategic Partnering Goals

KromaTiD is seeking strategic partners to tailor and accelerate the development of the platform:

- **Imaging and automation** - Build the core of dGH 2.0 using World class image scanning and automation

- **Gene editing** - Support the development of de Novo, Whole Genome dGH 2.0 to meet the unique structural genomic and throughput requirements of gene editing

- **Rare/undiagnosed diseases and oncology** - Partners to exploit dGH 2.0 for other genomic applications
  - Small inversions as biomarkers and drivers of disease
  - $1/cell will open large markets for screening and disease-specific biomarker discovery
**Funding**

*Services revenue*
- Research program support ✓
- Custom assay development ✓
- Clinical testing *(CLIA lab-2020)*

*Proprietary products revenue*
- Chromosome paints ✓
- Custom assay supply ✓
- License fees *(2020)*

*Strategic partnerships*
- Tech development *(coming Jan 2019)*
- Clinical and CDx programs *(2020)*

*Grant funded research*
- Technology development ✓
- KOL relationships *(submissions planned for 2019)*

*Equity/Debt*
- Capital line of credit ✓
- Bridging round *(Q12019)*
- Series B round? *(2019/20)*

**Markets**

*Gene editing*
- Therapeutics ✓
- Target validation/research cell lines *(2020)*

*Genetic diseases screening*
- Research ✓
- Clinical *(2020)*

*Oncology*
- Research ✓
- Clinical *(2019)*

*Other areas*
- Dosimetry ✓
- Recombinant protein cell lines R&D ✓

**Customers**

*Gene editing therapeutic*
- Multiple Top US companies

*Pharma*
- Multiple Top 20

*Biopharma*
- Oncology

*Grants*
- NHGRI
- State of CO
- (NCI)
- (NASA)

*Clinical labs and core facilities *(2020)*
Why We’re So Excited

Projected Sales by Segment ($1000s)

- Strategic Deals
- Additional rounds or deals (late 2019 or early 2020)

Gene Editing  Undiagnosed diseases  Other  Total

- 2018
- 2019
- 2020
- 2021
- 2022
Thanks!

For more information:

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