Forward-Looking Statement

This presentation contains, in addition to historical information, forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements relate to future events or future financial performance, and use words such as “may,” “estimate,” “could,” “expect” and others. They are based on our current expectations and are subject to factors and uncertainties which could cause actual results to differ materially from those described in the statements. These statements include those regarding potential therapeutic benefits of GR-MD-02 and expectations regarding the clinical trial, including the future enrollment of patients and the timing of results from the second cohort. Factors that could cause our actual performance to differ materially from those discussed in the forward-looking statements include, among others, that results from the first cohort of Phase 1 may differ materially from future results, and there is no guarantee that the current clinical trial will lead to positive outcomes or that GR-MD-02 will ever be approved by the FDA. We may experience delays in the current trial, and we may have difficulty enrolling patients and processing the resulting data. Future phases or future clinical studies may not begin or produce positive results in a timely fashion, if at all, and could prove time consuming and costly. Plans regarding development, approval and marketing of any of our drugs are subject to change at any time based on the changing needs of our company as determined by management and regulatory agencies. Regardless of the results of current or future studies, we may be unsuccessful in developing partnerships with other companies or obtaining capital that would allow us to further develop and/or fund any studies or trials. To date, we have incurred operating losses since our inception, and our ability to successfully develop and market drugs may be impacted by our ability to manage costs and finance our continuing operations. For a discussion of additional factors impacting our business, see our Annual Report on Form 10-K for the year ended December 31, 2013, and our subsequent filings with the SEC. You should not place undue reliance on forward-looking statements. Although subsequent events may cause our views to change, we disclaim any obligation to update forward-looking statements.
## Our Pipeline Of Galectin-3 Inhibitors

<table>
<thead>
<tr>
<th>Clinical Focus</th>
<th>Stage of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drug</strong></td>
<td><strong>Indication</strong></td>
</tr>
<tr>
<td><strong>Fibrosis</strong></td>
<td></td>
</tr>
<tr>
<td>GR-MD-02</td>
<td>Fatty liver disease with advanced fibrosis</td>
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<tr>
<td></td>
<td>Lung fibrosis</td>
</tr>
<tr>
<td></td>
<td>Kidney fibrosis</td>
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<tr>
<td><strong>Cancer Immunotherapy</strong></td>
<td></td>
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<tr>
<td>GR-MD-02</td>
<td>Melanoma</td>
</tr>
<tr>
<td><strong>Galectin-3 Inhibitors</strong></td>
<td></td>
</tr>
<tr>
<td>GR-MD-03</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>GR-MD-04</td>
<td>Oral</td>
</tr>
<tr>
<td>G-XXX*</td>
<td>Oral</td>
</tr>
</tbody>
</table>

*Galectin Sciences, LLC

Report on first cohort of Phase 1 Clinical Trial

Timely Reporting:
Last bloods: 3-7-14
Last visit: 3-21-14
Summary of Findings

- GR-MD-02 was safe and well tolerated at 2 mg/kg (80 mg/m²) with no drug-related adverse events
- Pharmacokinetics was consistent between individuals and after single and multiple doses; exposure was 40% of lowest dose used in NASH animal model; this was a therapeutic dose
- Key composite biomarkers of fibrosis improved after four doses of GR-MD-02
- Key inflammatory cytokines were decreased after four doses of GR-MD-02
- Patients with greater cellular injury as indicated by elevated ALT levels, had a marked decrease in CK-18, a cell death biomarker
- Galectin-3 blood levels do not correlate with disease activity and are not a biomarker of drug effect in patients with NASH with advanced fibrosis

In addition to being safe and well tolerated, GR-MD-02 improved biomarkers of fibrosis, inflammation and liver cell injury in patients with NASH with advanced fibrosis
All Chronic Liver Diseases Lead To Fibrosis
Example: Liver Fibrosis In Fatty Liver Disease (NASH)

Stage 1
Liver biopsy
Blue=fibrosis
Pericellular/Central (High Mag)

Stage 2
Portal/Central

Stage 3
Bridging Fibrosis

Stage 4
Cirrhosis

Healthy
Fatty
Fibrosis
Cirrhosis

Liver failure
Bleeding
Encephalopathy
Edema

Only therapy for patients with cirrhosis is liver transplantation

Patient
Asymptomatic
Occurs over decades
Galectin-3 is Expressed In Liver Macrophages And Is Markedly Increased In Human and Mouse NASH

Immunohistochemistry for Gal-3 (brown pigment indicates gal-3)

- Normal Mouse Liver
- NASH Mouse Liver
- NASH Human Liver

- Kupffer cells = liver resident macrophages
- Portal macs = macrophages located in portal regions
GR-MD-02, A Galectin-3 Inhibitor, Has Therapeutic Effect On NASH With Fibrosis In Mouse Model

<table>
<thead>
<tr>
<th>NAFLD Activity Score</th>
<th>Normal</th>
<th>NASH:Control</th>
<th>NASH:GR-MD-02</th>
<th>GR-MD-02 Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat</td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td><strong>NAFLD Activity Score</strong></td>
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<tr>
<td>Cell death</td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td>• Fat</td>
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<tr>
<td>Inflammation</td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td>• Cell death</td>
</tr>
<tr>
<td>Collagen (Fibrosis)</td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td>• Inflammation</td>
</tr>
<tr>
<td>Gal-3 Protein</td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td><img src="image" alt="H&amp;E" /></td>
<td><strong>Collagen (Fibrosis)</strong></td>
</tr>
</tbody>
</table>

Improvement is linked to decreased tissue Galectin-3
GR-MD-02 is a Galectin-3 inhibitor that reduces collagen synthesis and increases collagen degradation in pre-clinical models.

**Liver Fibrotic Tissue Homeostasis**

<table>
<thead>
<tr>
<th>Normal</th>
<th>Fibrosis</th>
<th>Restoration to Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collagen Synthesis = Collagen Degradation</td>
<td>Collagen Synthesis + ↔ Collagen Degradation</td>
<td>Collagen Synthesis +/- Collagen Degradation</td>
</tr>
</tbody>
</table>

In the normal liver, collagen and matrix protein synthesis matches degradation to provide an appropriate amount of extracellular matrix.

Fibrosis results from increased collagen and other matrix protein synthesis with little to no change in collagen degradation.

Fibrosis can resolve either by a reduction in collagen synthesis or an increase in degradation. The combination would increase the rate of resolution.
GR-MD-02 Is Being Developed For The Indication Of NASH With Advanced Fibrosis (Stage 3 and 4)

- No certainty of progression from early to late disease in an individual
- Late disease much closer to clinical outcomes
- Surrogates of clinical outcomes are better developed for late disease
- GR-MD-02 reduces inflammation, ballooning and fat in NASH and reduces existing fibrosis and reverses cirrhosis in animal models
### Phase 1 Clinical Trial Of GR-MD-02 In NASH With Advanced Fibrosis: Report On Cohort 1

**Patient inclusion:** Biopsy proven NASH with advanced fibrosis (stage 3)

**Design:** Cohort has 8 patients (6 active, 2 placebo, blinded)

**Dose:** Starting dose of 2 mg/kg lean body weight (equivalent to 80 mg/m²);
Infusions at days 0, 28, 35 and 42.

<table>
<thead>
<tr>
<th>Infusion</th>
<th>PK</th>
<th>PK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td>-1</td>
<td>0</td>
</tr>
<tr>
<td>Biomarkers</td>
<td></td>
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</tbody>
</table>

**Primary endpoints:** Safety  
Pharmacokinetics

**Secondary endpoints:** Disease-related serum biomarkers to assess for potential treatment effect
Patient Characteristics & Safety

Patient Characteristics

- 6 women and 2 men
- Ages 40-64 (mean=54)
- Mean body mass index (BMI)=39 (obese >30)
- Diabetes Mellitus in 6 patients
- Patients had a liver biopsy within one year of enrollment
  - All patients had definitive pathological diagnosis of NASH
  - 7 patients had stage 3 fibrosis (bridging); 1 patient had stage 4 fibrosis
- All patients enrolled completed full protocol through final follow-up visit at day 70.
- Last subject, last blood draw was 3-7-14; Last subject, last visit was 3-21-14

Patient Safety

- There were no Serious Adverse Events
- There were no Treatment Emergent Adverse Events in patients receiving GR-MD-02 that were attributed to the drug
- One patient receiving GR-MD-02 had several mild AE’s that were judged by investigator to be unrelated to drug
- Two patients receiving placebo had mild AE’s that were judged by investigator as possibly related
- There were no treatment emergent laboratory or ECG findings

GR-MD-02 at a dose of 2 mg/kg (80 mg/m²) was safe and well tolerated
Pharmacokinetics: GR-MD-02 Blood Levels Were Consistent Between Individuals And Not Significantly Different After Single Or Multiple Infusions

First Infusion (week 1)
- $C_{\text{max}} = 16.3 \mu g/mL$
- $T_{1/2} = 19.9 \text{ h}$
- $AUC = 572.6 \text{ h} \cdot \mu g/mL$
- $V_{ss} = 5.2 \text{ L}$
- Variability $\leq 15\%$

Fourth Infusion (week 7)
- $C_{\text{max}} = 17.7 \mu g/mL$
- $T_{1/2} = 20.5 \text{ h}$
- $AUC = 645.4 \text{ h} \cdot \mu g/mL$
- $V_{ss} = 4.7 \text{ L}$
- Variability $\leq 24\%$

 Accumulation ratio $\approx 1.16$
(95% CI 0.85 to 1.47)

The AUC in humans given 2 mg/kg was approximately 40% of the AUC of the lowest therapeutic dose in the mouse NASH model
Assessment Methods for Liver Fibrosis

Liver biopsy
- Potential serious complications
- 1/50,000th of liver
- High sampling variability
- 41% discordance of 1 fibrosis stage in NASH*

Serum markers

Hepatic venous pressure gradient (HVPG)

Functional metabolic and shunt tests (eg. HepQuant™)
- Potential serious complications
- 1/50,000th of liver
- High sampling variability
- 41% discordance of 1 fibrosis stage in NASH*

Major Pathological Processes in NASH

Steato-Hepatitis (NASH Activity)
- Ballooning of liver cells (cell death/apoptosis) key hallmark
- Fat in liver cells (steatosis)
- Immune cell infiltration (inflammation)

Fibrosis/Cirrhosis
- Increase in collagen/matrix
- Disruption of architecture
- Liver cell nodules

Do Not Always Correlate in Same Patient
- Can have high NASH activity score with minimal fibrosis
- Can have advanced fibrosis/cirrhosis with minimal NASH activity

We measured biomarkers of both major pathological processes
Serum Biomarkers Of Fibrosis In NASH

**Composite Scores**

**FibroTest™ (FibroSURE™)**
- Indirect biomarker of fibrosis
- Age and gender, Alpha-2-macroglobulin, Haptoglobin, Apolipoprotein A1, GGTP, Total bilirubin

**ELF (Enhanced Liver Fibrosis) Score**
- Direct biomarker of fibrosis
- Hyaluronic acid
- TIMP1 (tissue inhibitor of metalloproteinase-1)
- P3NP (amino terminal propeptide of type III procollagen)

**Individual Markers**

**Hyaluronic Acid**
- Matrix polysaccharide
- Direct marker
- Correlates to fibrosis

**Exploratory***
- TGF-β
- Lumican
- Osteopontin
- Matrix Metalloproteinases

* Indicates that there is some evidence that suggests they are increased in fibrosis, but not confirmed in sufficient number of patients or studies

For more information and references on biomarkers: [http://bit.ly/1jzFK50](http://bit.ly/1jzFK50)
FibroTest™ (FibroSURE™) Scores Significantly Decreased In GR-MD-02 Treated Patients

**One patient on GR-MD-02 had scores < 0.08 which was highly discordant with biopsy (stage 3). Patient had high haptoglobin which is known for false negative test.

FibroTest™ has been shown to:
- Correlate with stage of fibrosis
- Assess fibrosis regression
- Assess fibrosis progression
- Predict liver-related mortality

Note: While the numbers are small, exploratory statistics have been performed to evaluate differences using a one-sided t-test and confirmed using a non-parametric test, Mann-Whitney.
ELF Score Tended To Decrease In GR-MD-02 Treated Patients

ELF score has been shown to:
- Correlate with stage of fibrosis
- Assess progression (0.032 increase/yr in PBC)
- Predict mortality (a one unit change in score correlates to a 2-fold change in liver related mortality)

Equivalent to a 0.5 change on scale
Hyaluronic Acid (HA) Levels Were Decreased In A Subset Of Patients On GR-MD-02

Animal Study

- HA levels measured in NASH mice treated with GR-MD-02
- HA levels decreased at all three doses compared to vehicle-treated controls
- Some animals had variable levels

Study Results

- 3 of 6 patients treated with GR-MD-02 had significant reductions in HA
- No change in placebo patients
- Multiple clinical studies have shown that HA levels correlate with liver fibrosis

No consistent elevation and/or changes in Osteopontin, TGF-β or MMPs; Lumican presented in later slides
Serum Biomarkers of NASH Inflammation and Injury

Inflammatory Cytokines

Key cytokines*
- IL-6
- IL-8
- TNF-α

Exploratory**
- INF-γ
- Endothelin-1
- IP-10
- VEGF
- CD40-ligand

* Evidence of association with human NASH and importance in pathogenesis, particularly as products of macrophages

** Some evidence of association with human and/or animal NASH in at least one publication

Cellular Injury

Serum Transaminases
- ALT and AST
- Enzymes released from liver cells
- 2/3 of NASH patients have normal levels at any given time
- Entire spectrum of disease can be seen with normal levels

Cell Death (Apoptosis)

Cytokeratin 18
- A circulating biomarker of cell death
- Predictive of NASH severity

For more information and references on biomarkers: [http://bit.ly/1jzFK50](http://bit.ly/1jzFK50)
Interleukin-8 Levels Were Significantly Reduced In GR-MD-02 Treated Patients

- Pro-inflammatory cytokine expressed in macrophages
- Elevated serum levels in NASH
- Study patients had elevated serum levels
- GR-MD-02 treated patients had significant reduction when compared to placebo

<table>
<thead>
<tr>
<th>Study Cohort*</th>
<th>NAFLD**</th>
<th>Obese Controls**</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL-8 pg/mL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.0 ± 8.6</td>
<td>24.1 ± 38.5</td>
<td>7.8 ± 3.6</td>
</tr>
</tbody>
</table>

*Baseline levels

\[ p = 0.0219 \text{ (t-test)} \]
TNF-α Levels Were Significantly Reduced In GR-MD-02 Treated Patients

• Pro-Inflammatory cytokine and promotes lipid accumulation
• Elevated serum levels in NASH
• Study patients had elevated serum levels
• GR-MD-02 treated patients had significant reduction when compared to placebo

<table>
<thead>
<tr>
<th>Study Cohort*</th>
<th>NAFLD**</th>
<th>Obese Controls**</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNF-α pg/mL</td>
<td>23 ± 5.8</td>
<td>6.0 ± 16.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.9 ± 0.3</td>
</tr>
</tbody>
</table>

*Baseline levels

p = 0.059 (t-test)
Interleukin-6 Levels Were Significantly Reduced In GR-MD-02 Treated Patients

- Pro-Inflammatory cytokine secreted by T cells and macrophages.
- Increased serum levels in NASH
- Levels not increased in patients
- GR-MD-02 treated patients had significant reduction when compared to placebo

<table>
<thead>
<tr>
<th>Study Cohort*</th>
<th>NAFLD**</th>
<th>Obese Controls**</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL-6 pg/mL</td>
<td>6.1 ± 2.5</td>
<td>23.1±72.9</td>
</tr>
</tbody>
</table>

*Baseline levels

Exploratory cytokines were not elevated and/or did not change including INF-γ, Endothelin-1, IP-10, VEGF, CD40-ligand
Markedly Elevated Alanine Aminotransferase (ALT) Levels Decreased With GR-MD-02 Treatment

- Typical for NASH patients, there was a broad range of baseline ALT levels
- Those with ALT levels below 50 U/L had no change with therapy
- Two patients with ALT above 100 U/L, both of whom received active drug, had reductions of 39 U/L and 67 U/L
- One patient with ALT between 50 and 100 had minimal reduction of 10 U/L

<table>
<thead>
<tr>
<th>ALT Range</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-50</td>
<td>5</td>
</tr>
<tr>
<td>50-100</td>
<td>1</td>
</tr>
<tr>
<td>100-200</td>
<td>2</td>
</tr>
</tbody>
</table>

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Cell Death Biomarker CK18 Was Reduced In Two Patients With Highest ALT Levels

- CK-18, a biomarker of cell death of hepatocytes, was markedly reduced in the two patients with ALT greater than 100 U/L.
Fibrosis Biomarkers Were Reduced In The Two Patients Receiving GR-MD-02 With Highest ALT*

- FibroTest™ scores were markedly decreased in the high ALT patients after treatment with GR-MD-02
- Lumican, a matrix protein that is involved in fibrogenesis in the liver, was elevated in all patients, but was highest and had the greatest decrease with treatment in the two patients with high ALT levels

*Patient with intermediate ALT not included in analysis because of false negative FibroTest™ score
Patients With Low ALT Levels Receiving GR-MD-02 Had Improvement In Fibrosis Markers But Not Cell Death Markers

- The three GR-MD-02 treated patients with low ALT levels did not have changes in ALT.
- These three patients had lower CK-18 levels which did not decrease with therapy.
- Fibrosis markers of FibroTest™ and Lumican did improve with treatment.
GR-MD-02 Treatment Appears To Improve Both Major Pathological Processes In NASH

**Steato-Hepatitis (NASH Activity)**
- Ballooning of liver cells (cell death/apoptosis) key hallmark
- Fat in liver cells (steatosis)
- Immune cell infiltration (inflammation)

**Fibrosis/Cirrhosis**
- Increase in collagen/matrix
- Disruption of architecture
- Liver cell nodules

- **Improvement in Fibrosis Biomarkers:** There was a statistically significant reduction in Fibrotest™ and trends towards a reduction in ELF score and hyaluronic acid
- **Improvement in Inflammation Biomarkers:** There were statistically significant reductions in IL-6, IL-8 and TNF-α, all important cytokines in NASH
- **Improvement in Cell Death Biomarkers:** A patient subset with high ALT levels indicative of more cellular injury had improvement in CK-18
Patients Had A Normal Range Of Blood Galectin-3 Levels At Baseline And No Change With Treatment

<table>
<thead>
<tr>
<th>Cohort Range*</th>
<th>Normal Range**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gal-3 (ng/mL)</td>
<td>13.2 to 25.2</td>
</tr>
</tbody>
</table>

*Baseline values
**Range of values in a non-diseased population published by manufacturer (BG Medicine)

Timing of gal-3 levels
- Before 1st infusion
- 28 day after 1st infusion
- 14 days after 4th infusion
Marked changes in expression of galectin-3 in liver macrophages are not reflected in changes in blood galectin-3.

- No evidence for correlation between blood galectin-3 levels and disease activity or fibrosis stage in patients with NASH\(^1\)
- Blood galectin-3 levels in humans are correlated with obesity\(^1,2\) and diabetes\(^2\)

\(^1\)Yilmaz, et al. Clinical Biochemistry 2011
Summary of Findings

• GR-MD-02 was safe and well tolerated at 2 mg/kg (80 mg/m²) with no drug-related adverse events

• Pharmacokinetics was consistent between individuals and after single and multiple doses; exposure was 40% of lowest dose used in NASH animal model; this was a therapeutic dose

• Key composite biomarkers of fibrosis improved after four doses of GR-MD-02

• Key inflammatory cytokines were decreased after four doses of GR-MD-02

• Patients with greater cellular injury as indicated by elevated ALT levels, had a marked decrease in CK-18, a cell death biomarker

• Galectin-3 blood levels do not correlate with disease activity and are not a biomarker of drug effect in patients with NASH with advanced fibrosis

In addition to being safe and well tolerated, GR-MD-02 improved biomarkers of fibrosis, inflammation and liver cell injury in patients with NASH with advanced fibrosis
Next Steps: Continuation of Phase 1 Trial

- The dose of GR-MD-02 will be increased to 4 mg/kg (160 mg/m²) in the second cohort of 8-10 patients.
- Eight clinical sites in the US are now active to facilitate rapid enrollment of cohort 2.
- FibroScan™, a FDA-approved ultrasonic measure of liver tissue elasticity, has been added to the protocol for cohort 2. FibroScan™ will be performed at baseline and after the four doses in as many patients as possible to gain experience with this method of fibrosis assessment.
- Results from Cohort 2 are expected to be reported in July-August 2014 time frame.
- Planning for phase 2 clinical trials is ongoing. The results of the first cohort suggest that 2 mg/kg is a safe, well-tolerated dose that has indication of anti-fibrotic and anti-inflammatory effect. Therefore, this defines at least one potential dose level for phase 2 clinical trials.