IDENTIFICATION OF CD1A AS A DIAGNOSTIC MARKER AND THERAPEUTIC TARGET FOR CHRONIC INFLAMMATORY DISEASES

Dr. Roswitha Gropp | Klinikum der Universität München | 23. April 2018
• Identification and validation of novel therapeutic targets for chronic inflammatory bowel diseases (IBD).

• Development of individualized and phase dependent therapies for IBD.
IBD is an umbrella diagnosis covering two major forms: Crohn’s disease and Ulcerative Colitis.

IBD is characterized by:

- Abdominal pain,
- severe diarrhea,
- blood loss and
- progressive loss of peristaltic function.
Medical Need

• Requires life-long medication
• Treatment accompanied by severe side effects
• 40% of patients refractory to treatment
• Colectomy last resort but no cure (only for UC)
• Life long impact on patient’s lives
• Young patient population in full swing of their professional and private lives
• Instills social stigma
Novel Approach: HuCID platforms

- **HuCID Screen**
  - Identification of novel therapeutics
  - Stratification of patients

- **HuCID Disease Map**
  - Prediction of mechanistic side effects

- **HuCID Animal Model**
  - Higher translatability to clinical trials

Risk reduction in clinical development

PBMC → Challenge → Treatment → Read out
Identification of CD1a Expressing Monocytes as Biological Markers of IBD

A

B

C

\[ p = 0.0002 \]
\[ p = 0.001 \]

\[ p = 0.0006 \]
\[ p = 0.001 \]

\[ p = 0.003 \]
\[ p = 0.006 \]
CD1a+ Monocytes as Sensors and Mediators of Inflammation
HuCID Mouse Model: Proof of Concept Study
Treatment with anti CD1a antibodies
• Prevalence: 2.5–3 million people in Europe and 3.1 million people in USA are affected by IBD

• Present health care costs: $ 8.5 billion in 2016

• Prospected health care costs (2020): $ 9.5 billion / year.

• Targeted group: Patients refractory to current treatment with TNFα inhibitors

• Cautious estimate: € 1 bn /year
**Unique Selling Point for anti CD1a antibody**

**Novel** target addressing inflammatory monocytes
Improved side effects

<table>
<thead>
<tr>
<th>Product</th>
<th>Target</th>
<th>MOI</th>
<th>Application</th>
<th>Side effects</th>
<th>Development</th>
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<tbody>
<tr>
<td>Adalizumab</td>
<td>TNFα</td>
<td>mab</td>
<td>subcutaneous</td>
<td>Serious infections</td>
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<td>Infliximab</td>
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<td>Golimumab</td>
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<td>Tofacitinib</td>
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<td>small molecule</td>
<td>oral</td>
<td>Serious infections</td>
<td>Expected approval Q4 2018</td>
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<tr>
<td>Anti CD1a</td>
<td>CD1a+ Mo</td>
<td>mab</td>
<td>intravenous</td>
<td>Improved side effect profile</td>
<td>preclinical</td>
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Next steps:
- Phase II study in HuCID animal model with commercially available antibody
- Development of HTS assay for antibody screening
- Development of proprietary antibody directed against CD1a

<table>
<thead>
<tr>
<th>Working Package</th>
<th>Personnel costs (€)</th>
<th>Consumerables (€)</th>
<th>F&amp;E (€)</th>
<th>Time (month)</th>
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<tbody>
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<td>Animal Trials</td>
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<td>130.000</td>
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<td>HTS assay</td>
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<td>10.000</td>
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<td>Antibody</td>
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<td>Sum</td>
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<td>Costs total (€)</td>
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</table>
Thank you for your attention!

Meet us at poster B1

Scientific expertise

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