Pattern Therapeutics

A Novel Clinical Stage NASH Drug Candidate

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Executive Summary

- ***Unique Investment Opportunity***
  - A novel TLR antagonist to treat NASH and potentially other indications
  - 4 issued patents, with expiration dates extending up to 2030

- ***Multi-billion dollar market***
  - NASH market estimated at $24.3B in 2026

- ***Competitive Edge***
  - OCR 7314 candidate is already known to be safe in humans
  - Anti-inflammatory pathways that block development of liver injury

- ***Large M&A potential***
  - 27 Partnership deals in the last 2 years
  - Largest: $1.36B (Conatus Pharma and Novartis). Average: ~$180M. Median: ~$60M
  - Most Phase 1 and 2a assets are partnered

Currently seeking Series A financing, executive team, and specialty consultants

Experienced Scientific and Clinical Team

Dr. Wajahat Mehal, M.D., D. Phil.

Scientific Founder

Professor of Medicine, Yale University

Director, Yale Fatty Liver Disease Program
Director, Yale Weight Loss Program

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Dr. Scott L Friedman, M.D.

Scientific Advisory Board

Professor of Medicine, Liver Diseases, and Pharmacological Sciences, Icahn School of Medicine at Mount Sinai

Dean for Therapeutic Discovery, Icahn School of Medicine at Mount Sinai

NASH Market

- NASH is the most common liver disease in the United States with an estimated prevalence of 4-6%.
- Mortality from liver disease has been increasing over the last 10 years.
  New York Times “More Americans Are Dying of Cirrhosis and Liver Cancer” July 18th 2018.
- Prevalence NASH will increase by 15-50% in next 15 years.
- Mortality from NASH will further double in next 15 years.
- The NASH market is estimated to reach $25.3B by 2026.

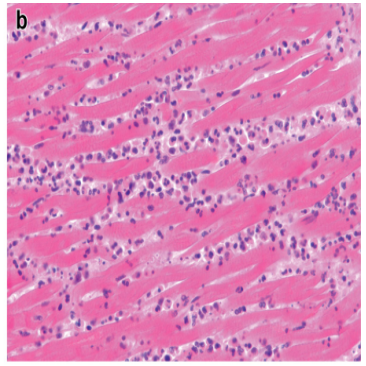
Sterile Inflammation is an important target in NASH

Sterile Inflammation (SI)

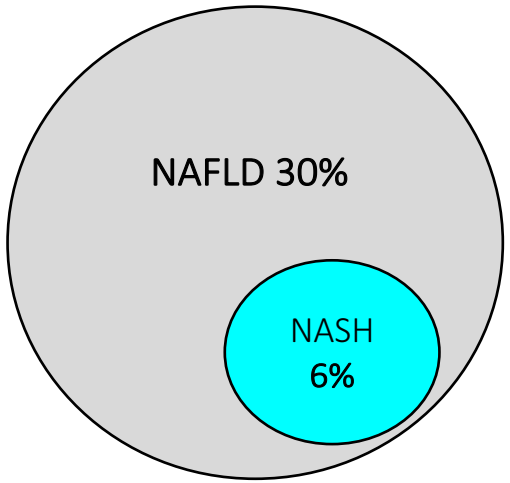
- A ubiquitous response
- Due to cell death and stress
- Mediated by TOLL Like Receptors (TLRs)
- Very high amplitude in the liver
- Hepatic SI is very malleable

Trauma

Myocardial Infarct



Prevalence



SI implications in NASH

- NAFLD ("fatty liver") occurs due to metabolic stress.
- SI exacerbates metabolic stress and leads to development of NASH, and if left untreated, progresses to fibrosis, cirrhosis, and liver cancer.
- TLR9 KO mice are protected from liver injury in HFD model of NASH.
- Hepatic SI is the primary research focus of Mehal lab at Yale School of Medicine.

New NASH therapeutic with clinical safety data

- OCR7314 was previously developed by biopharma for non-liver indication, but found to localize to the liver
- Inhibitor of toll-like receptor 9. **TLR9 is required for SI** in NASH[1] and implicated in acute pancreatitis[2]
- Compelling **in-vivo efficacy** data in HFD model of NASH
- Phase 1 safety and Phase 2 safety and tolerability data.

The Opportunity

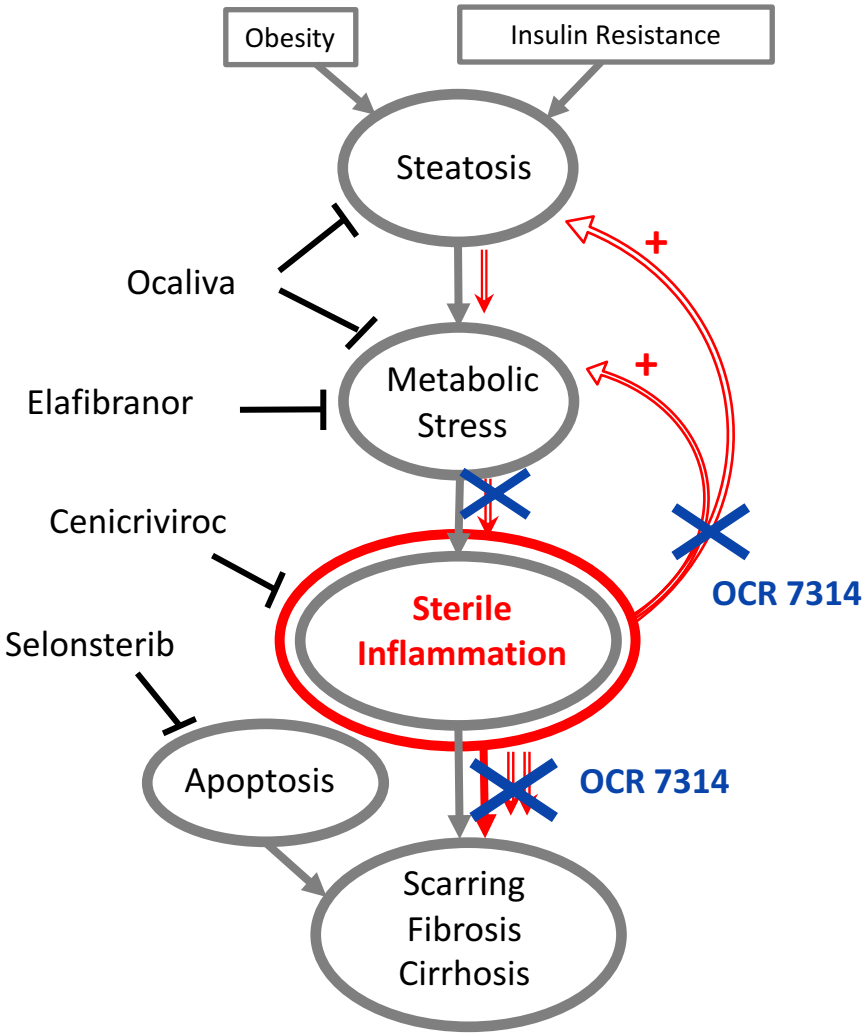
OCR 7314 is an excellent drug candidate for treating NASH because it:

- **Preferentially localizes to endosomes in liver cells**, the exact site of targeted TLR9 receptors, and the **intended site of drug action for NASH**.
- Antagonizes a system that is NOT active in healthy humans.
- Near a major inflection point, filing a new **IND for NASH.**
- **Is an excellent candidate for combination therapy as it approaches a pathway that is different from other drugs in development**

1 Garcia-Martinez (2016) JCI. https://www.jci.org/articles/view/83885

2 Hoque R (2013) J. Immunol. http://www.jimmunol.org/content/190/8/4297.long

Positioning of OCR 7314 in the NASH Market



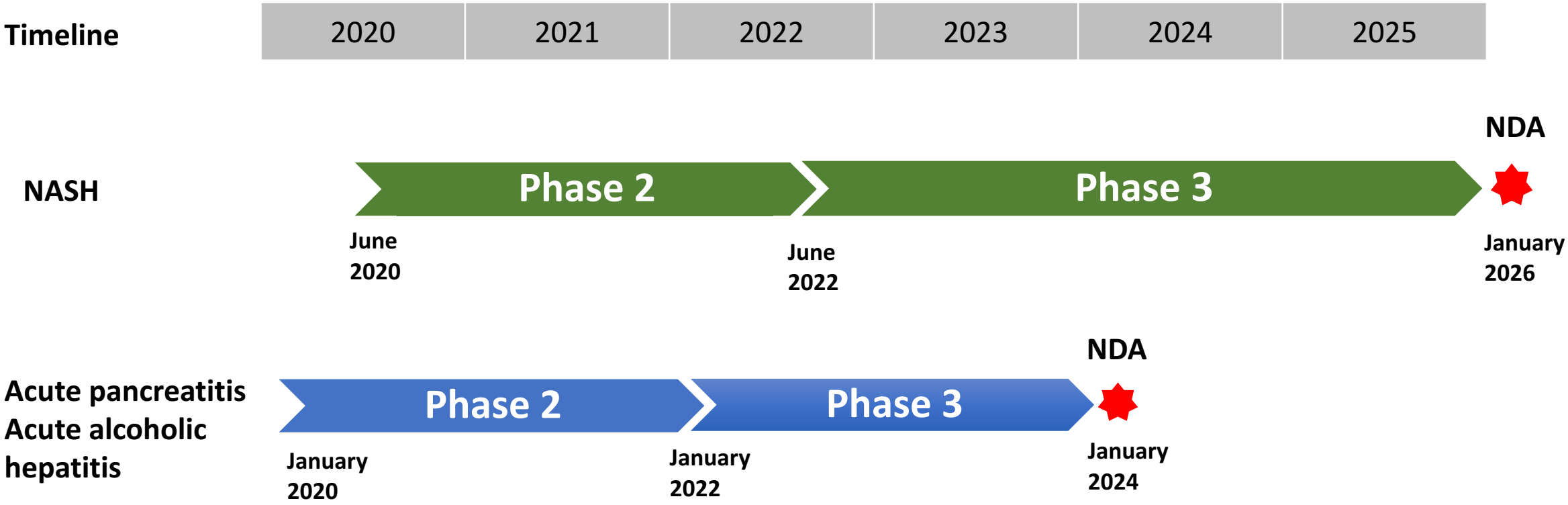
OCR 7314 Differentiation

- A unique dual mode of action
- Blocking sterile inflammation (SI) blocks positive feedback loop and reduces steatosis
- Blocking SI stops progression to fibrosis
- OCR 7314 preferentially:
  - Targets TLR 9
  - Accumulates in the liver, the ideal target organ
  - Taken up by endosomes and does not need to enter the cytosol
- A great candidate as a primary therapeutic, and in combination with drugs targeting steatosis, metabolic stress, or apoptosis

Competitive Advantage of OCR7314

	OCR7314	Ocaliva	Elafibranor	Cenicrivioc	Selonsterib
Block SI and feedback loop	✅	x	x	✅	✅
Accumulates in liver	✅	✅	x	x	x
Multi-organ potential	✅	x	x	x	x
Disease specific pathways	✅	x	x	x	x

Clinical Development Plan and Timeline



Acute indications: unmet need and faster time to market

Pursuing acute indications will allow us to get to market sooner due to:

- **Shorter clinical trials**
- **Existing 8-week human safety data**

Acute Pancreatitis (AP)

- Incidence: 5-35 per 100,000 (15K – 115K cases annually)
- Currently supportive care only, no approved therapies
- Time course and mortality: The inflammatory phase 3-14 days, with 2% mortality
- Frequently requires many weeks in hospital
- Frequently requires ICU admission

Acute Alcoholic Hepatitis (AAH)

- Incidence: 40-80 per 100,000 (120k-240K cases annually)
- 40% increase between 2002-2010
- Current treatment: Supportive care only, no approved therapies
- Time course and mortality: Natural history over 3-4 weeks, 10-15% mortality
- Frequently requires many weeks in hospital
- Frequently requires ICU admission

The Ask

Seeking $5-9M Series A for the clinical development of OCR7314 and new company formation

Use of funds

- OCR7314 has an active IND at 1mg/kg weekly S.Q. administration. We would like to test two lower doses, and less frequent (bi-weekly and once-a-month) administration in mouse model of NASH.
- Incorporate new company and hire team.
- Gap analysis and preparation of briefing package for pre-IND meeting with the FDA.
- Manufacture API for clinical trials.
- Genotoxicity and toxicity studies extended to 24 weeks for NASH indication (currently 8 weeks).
- Conduct phase 2b clinical trials.
- Prepare for next fundraising rounds.

Acute Indications – pancreatitis and alcoholic hepatitis

- Seeking $3-5M to complete Phase 2

Chronic Indication - NASH

- Seeking $8-9M to complete Phase 2

Seeking strong management team

- CEO, CMO, Advisors

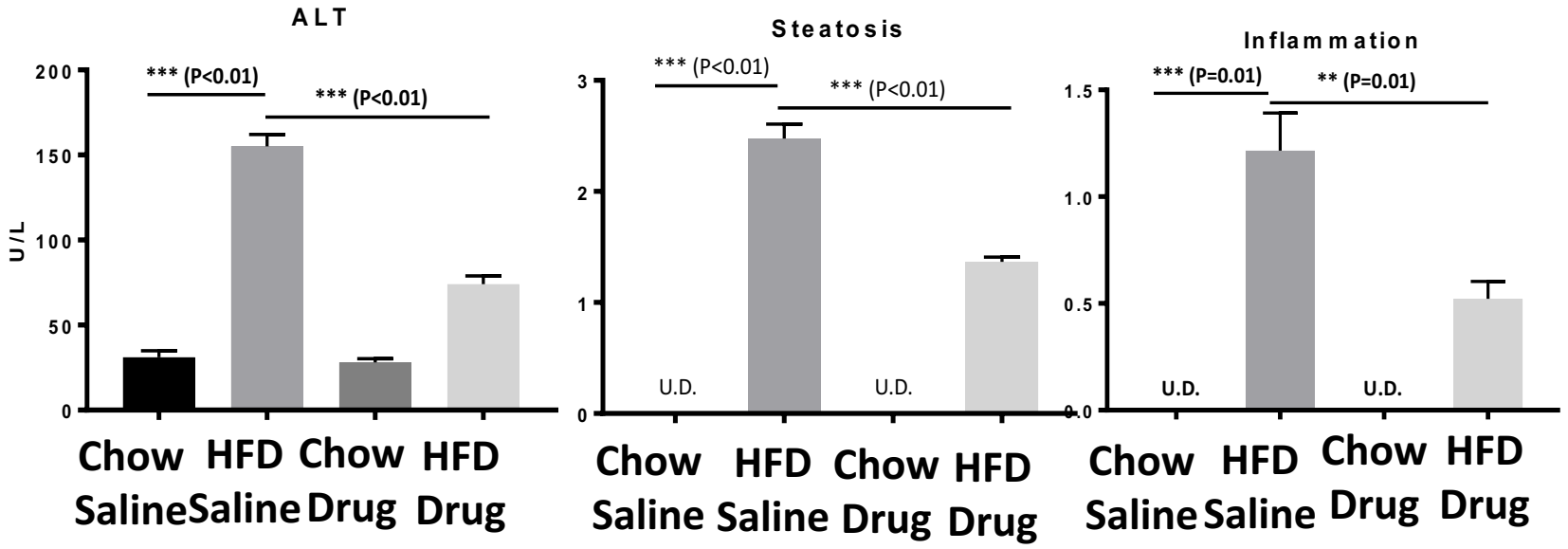
Seeking Specialty Consultants

- CMC
- Regulatory

Additional Slides

In-vivo efficacy

OCR 7314 reverses liver injury in the HFD* model of NASH



*** HFD: High Fat Diet for 12 weeks in wild-type mice**

Phase 1 and 2 safety data already available

30 healthy adults:

4-week PK study with doses up to the highest dose supported by the NOAELs in the rat and monkey toxicology studies; safe and well-tolerated.

52 patients:

- 8-week safety study across 3 dose levels; safe and well-tolerated at all doses.
- 8-week expansion of the highest tolerated dose level to evaluate preliminary markers of efficacy (failed to meet pharmacodynamic endpoints for intended indication)

Target Product Profile for NASH

Target	Annotations
Primary Indication	NASH, first-line therapy. Combination with other NASH drugs with different MOA.
Patient Population	Adults of all ages, with moderate to severe form of NASH. Pediatric population (11 years old and up) with NASH.
Usage	Primary treatment as the first line therapy. Combination with other NASH drugs.
Dose	Tentative dose below 1 mg/kg/week. Lower dose likely due to preferential accumulation in the liver.
Frequency	Weekly or less frequently.
Treatment Duration	Chronic, long-term (24+ weeks).
Delivery Mode	Subcutaneous injections.
Efficacy	Decrease in NAS liver histology score by 2 points.
Safety	Safe and well-tolerated in 8-week trials in 30 healthy adults. TLR pathway is activated during injury; no expected off-target effects.
Therapeutic Modality	Inhibitory ODN.

Clinical Development plan for NASH

Phase II

- **Prospective double blinded randomized clinical trial of OCR 7314 in NASH.**
- **Inclusion. Biopsy proven NASH with F1 - F3 fibrosis, and greater than 8% steatosis.**
- **125 patients randomized 50:50:25. The two larger groups are OCR7314 at approved dose (1mg/Kg/week) and a lower dose TBD, with 25 controls.**
- **Primary endpoint at one year. Improvement in histological NAS score by 2 points with no worsening of fibrosis.**
- **Secondary endpoints: A 30% relative decrease in MRI-PDFF (marker of steatosis).**

Clinical Development plan for acute indications

Acute Pancreatitis Clinical development plan:

Phase 2b double blinded prospective randomized trial.

n=40 in intervention and n=40 in control arms.

Duration 4 weeks.

Primary Outcomes:

Systemic Inflammatory Response Syndrome (SIRS) score (temperature, heart rate, respiratory rate/arterial CO2 and white blood count)

Secondary Outcomes:

Organ failure

C-Reactive Protein (CRP) levels

Serum IL-6 and IL-8

Days in ICU

Days in hospital

Acute Alcoholic Hepatitis Clinical development plan:

Phase 2b double blinded prospective randomized trial.

n=80 in intervention and n=80 in control arms.

Duration 4 weeks.

Primary Outcomes:

28 day survival

Secondary Outcomes:

Progression to hepatorenal syndrome

Days in ICU

Days in hospital