A Study of CAP-1002 in Ambulatory and Non-Ambulatory Patients with Duchenne Muscular Dystrophy **[HOPE-2]**

12-month Top-Line
Final Study Results

May 13, 2020 Conference Call
NASDAQ: CAPR

Forward-Looking Statements

Statements in this presentation regarding the efficacy, safety, and intended utilization of Capricor's product candidates; the initiation, conduct, size, timing and results of discovery efforts and clinical trials; the pace of enrollment of clinical trials; plans regarding regulatory filings, future research and clinical trials; regulatory developments involving products, including the ability to obtain regulatory approvals or otherwise bring products to market; plans regarding current and future collaborative activities and the ownership of commercial rights; scope, duration, validity and enforceability of intellectual property rights; future royalty streams, revenue projections; expectations with respect to the expected use of proceeds from the recently completed offerings and the anticipated effects of the offerings, and any other statements about Capricor's management team's future expectations, beliefs, goals, plans or prospects constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Any statements that are not statements of historical fact (including statements containing the words "believes," "plans," "could," "anticipates," "expects," "estimates," "should," "target," "will," "would" and similar expressions) should also be considered to be forward-looking statements. There are a number of important factors that could cause actual results or events to differ materially from those indicated by such forward-looking statements. More information about these and other risks that may impact Capricor's business is set forth in Capricor's Annual Report on Form 10-K for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on March 27, 2020. All forward-looking statements in this press release are based on information available to Capricor as of the date hereof, and Capricor assumes no obligation to update these forward-looking statements.

CAP-1002 is an Investigational New Drug and is not approved for any indications. None of Capricor's exosome-based candidates have been approved for clinical investigation.

Call Participants

- **Linda Marban, Ph.D.** – Chief Executive Officer, Capricor Therapeutics, Inc.

- **Craig McDonald, M.D.,** Professor and Chair of the Department of Physical Medicine and Rehabilitation and Director of the Neuromuscular Disease Clinics at the University of California, Davis. Dr. McDonald is an internationally recognized expert in the clinical management and rehabilitation of neuromuscular diseases including DMD. He is the national PI of the Capricor HOPE-2 Trial.

- **AJ Bergmann**, Chief Financial Officer, Capricor Therapeutics, Inc.

Capricor's Regulatory Designations - DMD

GOAL OF FDA'S RMAT DESIGNATION

To facilitate efficient development and expedite review of a drug

Similar to breakthrough therapy designation:

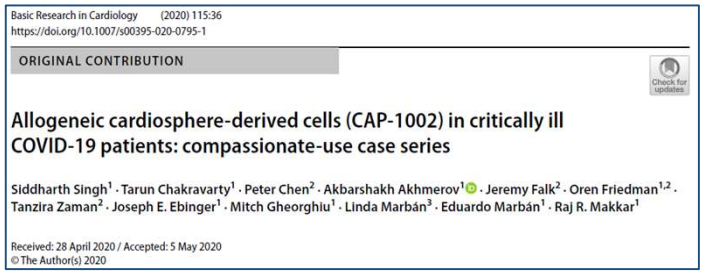
- RMAT provides benefits that include more frequent meetings with FDA to discuss the development plan for the product candidate
- Eligibility for rolling review and priority review

Products may also be eligible for accelerated approval

- On the basis of a surrogate or intermediate endpoint reasonably likely to predict long-term clinical benefit
- Reliance upon data obtained from a meaningful number of sites

CAP-1002 Mechanism of Action
Immunomodulation

- **Allogeneic cardiosphere-derived cells (CDCs)**
- MOA: cells secrete exosomes:
  - Contain miRNAs, other non-coding RNAs and proteins
  - Internalized by target cells
  - Strongly immunomodulatory
  - 3 known miRNAs drive CAP-1002 potency
- Strong safety record in more than 150 subjects
- Recent peer reviewed publication: COVID-19



Basic Research in Cardiology (2020) 115:36
https://doi.org/10.1007/s00395-020-0795-1

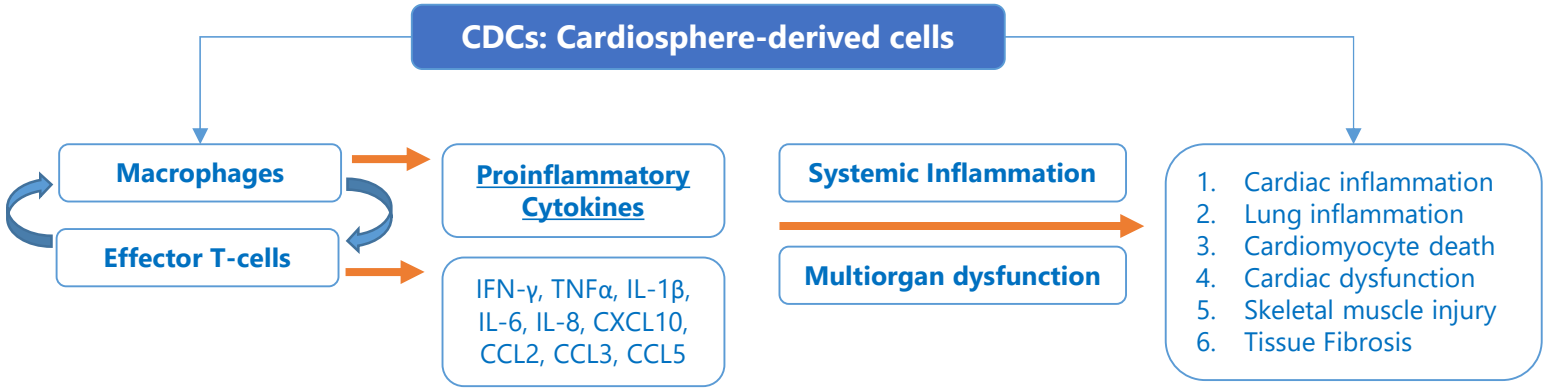
ORIGINAL CONTRIBUTION

Allogeneic cardiosphere-derived cells (CAP-1002) in critically ill COVID-19 patients: compassionate-use case series

Siddharth Singh[1] · Tarun Chakravarty[1] · Peter Chen[2] · Akbarshakh Akhmerov[1] · Jeremy Falk[2] · Oren Friedman[1,2] · Tanzira Zaman[2] · Joseph E. Ebinger[1] · Mitch Gheorghiu[1] · Linda Marbán[3] · Eduardo Marbán[1] · Raj R. Makkar[1]

Received: 28 April 2020 / Accepted: 5 May 2020

Immunomodulatory Effects of CAP-1002



CDCs: Mechanism of Action

1. Cardiomyogenesis
2. Cardiomyocyte survival
3. Anti-inflammatory
4. Immunomodulatory
5. Angiogenic
6. Anti-fibrotic

CDCs: Pro-inflammatory cellular targets

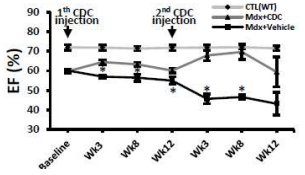
1. Enhanced cell debris
2. Decreased TNFα, IL-1β, CCL5 production
3. Increased levels of IL-10 by macrophages

CDCs: Efficacy (Pre-clinical and Clinical)

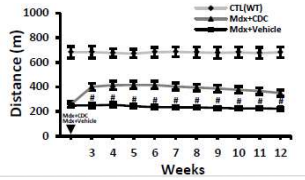
1. **Myocardial ischemia (CADUCEUS, Phase I/II ALLSTAR, DYNAMIC Phase IIa)**
2. Myocarditis
3. **Muscular dystrophy (HOPE-Duchenne, HOPE-2)**
4. **Heart failure with preserved ejection fraction (REGRESS, Phase I)**
5. Senescence
6. Non-ischemic dilated cardiomyopathy
7. **Pulmonary arterial hypertension (ALPHA, Phase I)**

Trajectory of CDCs in DMD (Preclinical Data)

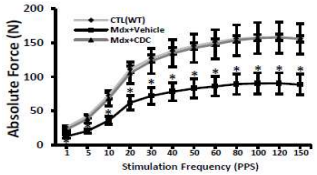
- **Hypothesis:** CDCs to treat **cardiomyopathy**
- Left ventricular ejection fraction markedly improved vs. control
  - *P*<0.05 at all timepoints through 12 weeks of follow-up*



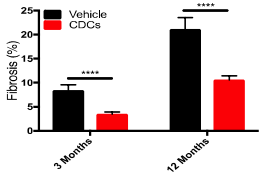
- **Hypothesis:** CDCs to treat **skeletal muscle function**
- Exercise performance approximately doubled vs. control
  - *P*<0.005 at all timepoints through 12 weeks of follow-up*



- **Hypothesis:** CDCs to treat **soleus muscle**
- Twitch force, tetanic force, and fibrosis in soleus (slow-twitch) and extensor digitorum longus (fast-twitch) muscles significantly improved vs. control
  - *P*<0.05; muscles isolated at three weeks post-treatment*



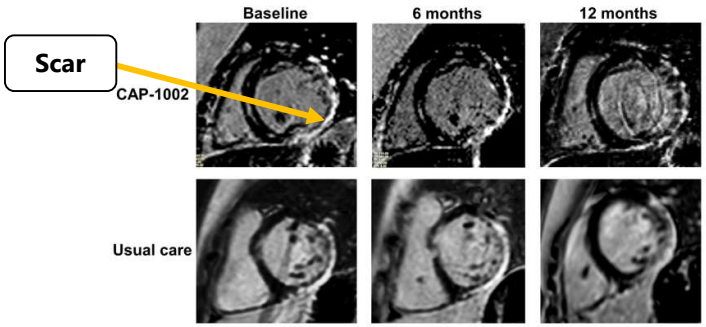
- **Hypothesis:** CDCs to treat **diaphragm muscle**
- Fibrosis in the diaphragm markedly declined vs. control
  - *P*<0.0001; muscles isolated at 3- and 12 months post-treatment

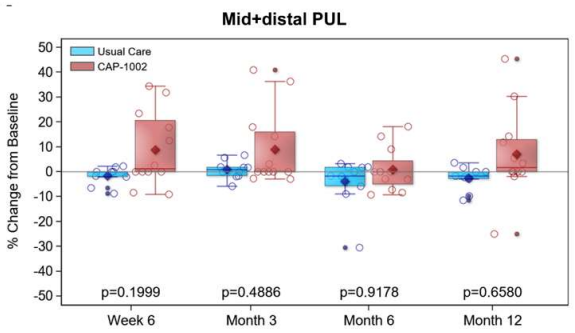


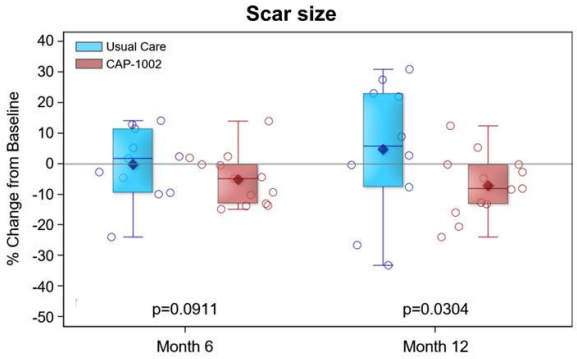
*Aminzadeh et al. *Stem Cell Reports*. 2018.

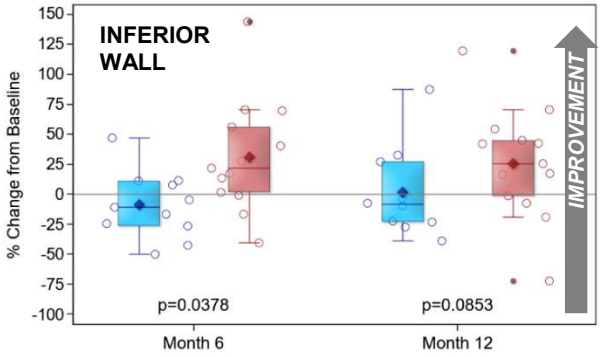
HOPE-Duchenne (Phase I/II Results)

Reduced Cardiac Scar and Improved PUL









Usual Care (N = 11) CAP-1002 (N = 13)

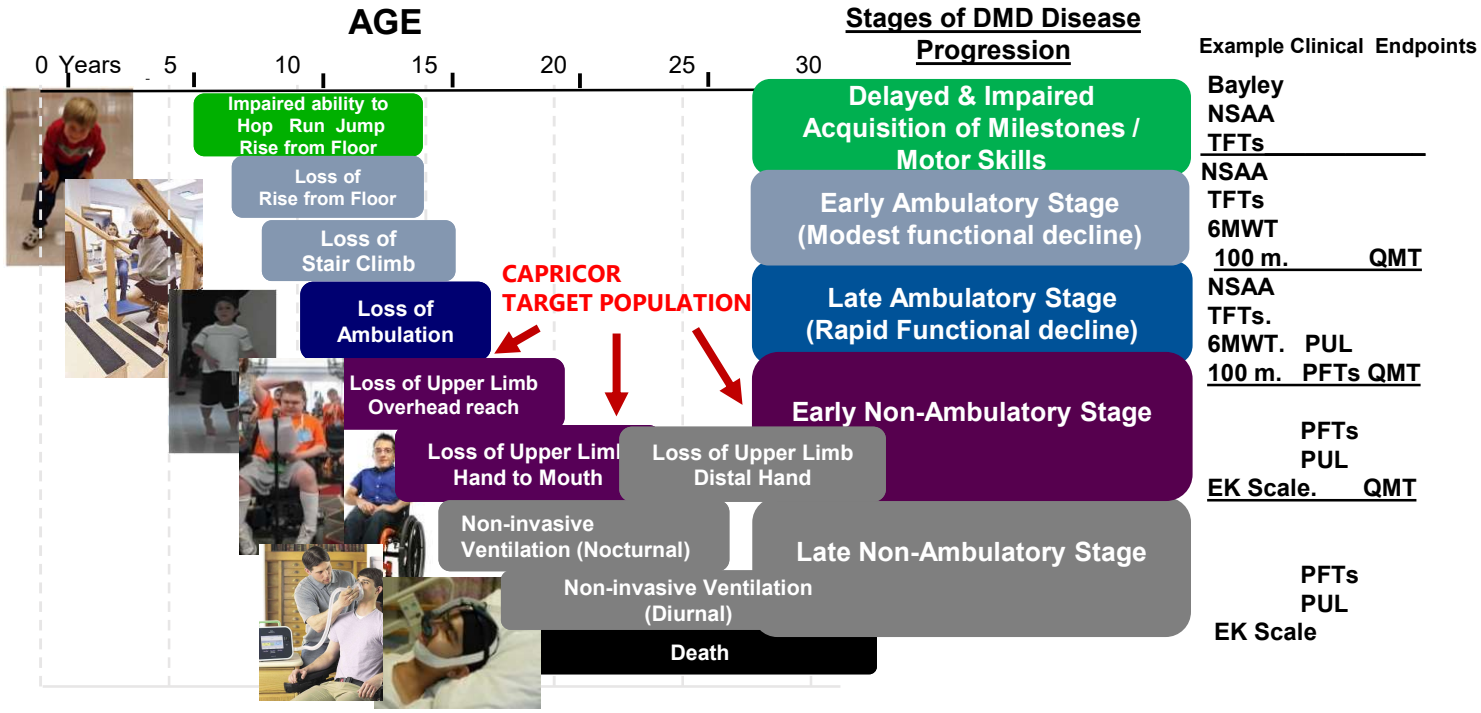
*p-values are based on absolute change from baseline

HOPE-2

12-Month Top-Line Final Data

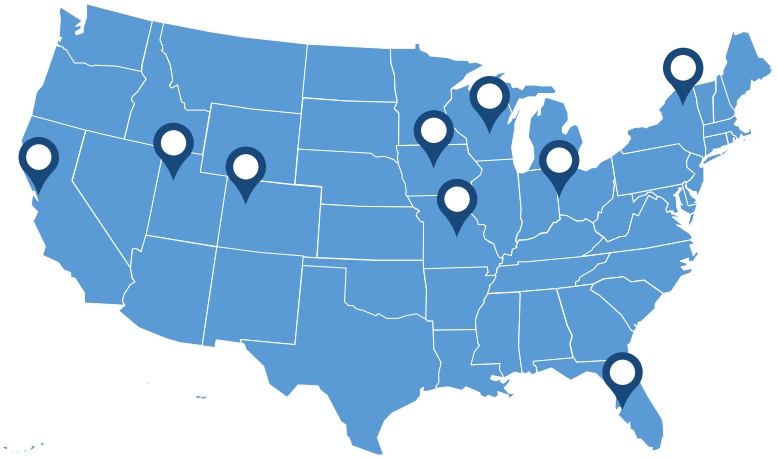
Dr. Craig McDonald
National PI

DMD Progression is Sequential, Non-Linear and Irreversible



HOPE-2 Clinical Trial

- **Design:** Phase II, randomized, double-blind, placebo-controlled trial in participants with DMD and reduced skeletal muscle function
- **Objective:** Evaluate safety and efficacy of CAP-1002
- **Dosing Regimen:** 150M cells delivered intravenously every 3 months
- **Sites:** 9 sites (USA)
- **Data:** ITT population - 20 subjects
- **Demographics**
  - Mean age: 14.3 years
  - All patients were on corticosteroids
  - ~ 80% of patients were non-ambulant



https://www.clinicaltrials.gov/ct2/show/study/NCT03406780.

Performance of the Upper Limb (Entry Items)

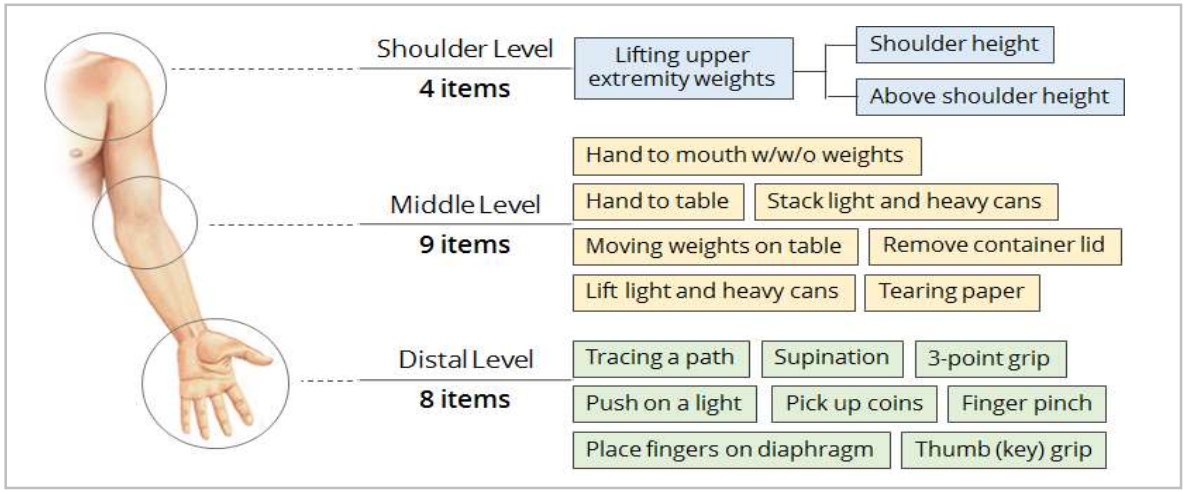
Capricor Therapeutics™

Target Population

0	1	2	3	4	5	6
No useful function of hands.	Can use hands to hold pen or pick up a coin or drive a powered Chair	Can raise 1 or 2 hands to mouth but cannot raise a cup with a 200g weight in it to mouth	Can raise standardized plastic cup with 200g weight in it to mouth using both hands if necessary	Can raise both arms to shoulder height simultaneously w/ or w/o compensation	Can raise both arms simultaneously above head only by flexing the elbow	Full overhead reach without compensation

Performance of the Upper Limb (PUL)

to Assess Skeletal Muscle



PUL v.2.0:

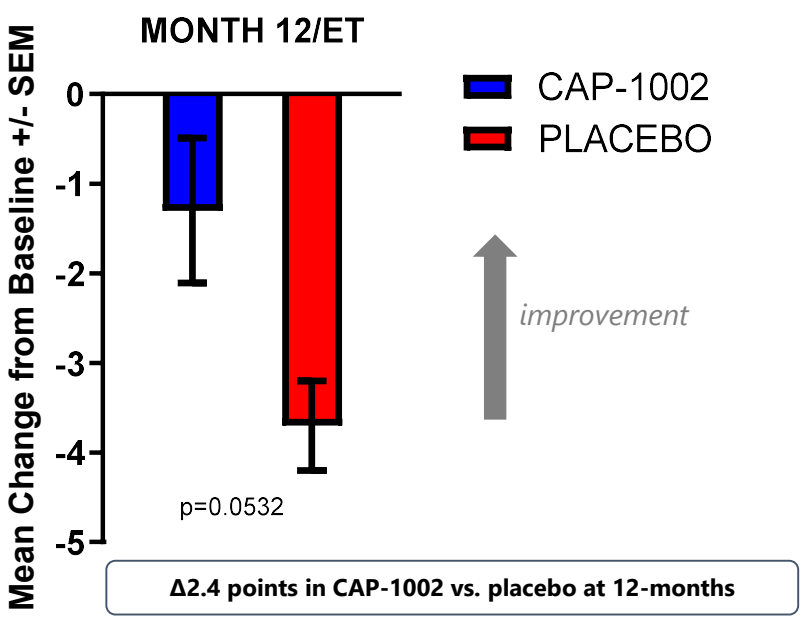
- 3-point response scale - more robust and reproducible than v1.2
- Compensatory strategies allowed to achieve tasks (not allowed in v1.2)
- v2.0: better able to detect change at 12 months at all levels of ability*

*Mayhew et al, 2019; Pane et al, 2018.

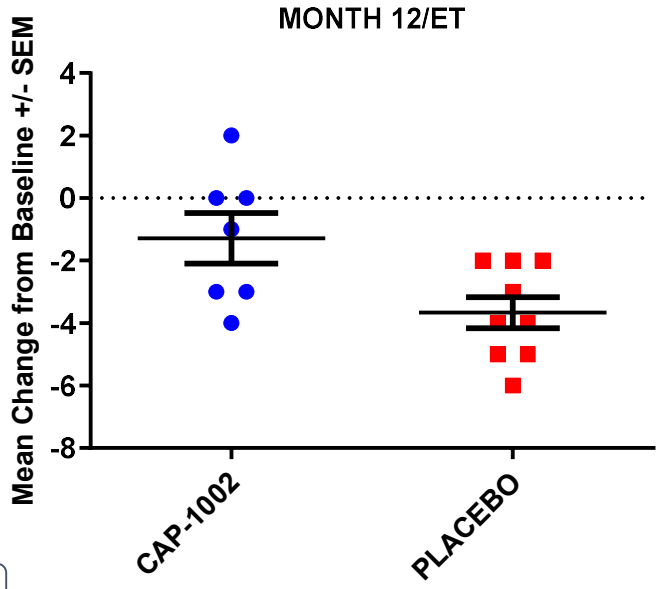
Upper-Limb
Skeletal Muscle

Measured by:
Performance of the Upper Limb (PUL) 2.0
Performance of the Upper Limb (PUL) 1.2

Clinically Meaningful Changes Observed in PUL 2.0
(Shoulder + Mid + Distal)

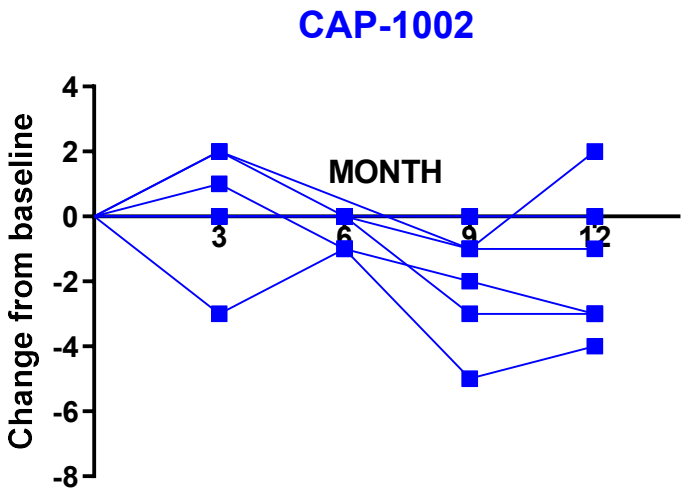


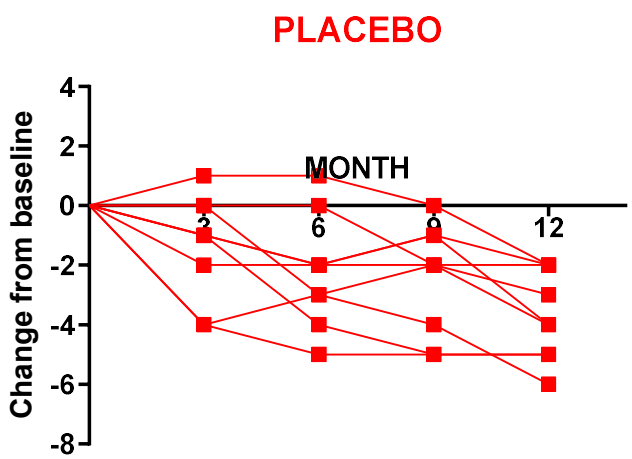
Δ2.4 points in CAP-1002 vs. placebo at 12-months



Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months
P-values are nominal values unadjusted for multiple testing

Individual Patient Data: PUL 2.0
(Shoulder + Mid + Distal)

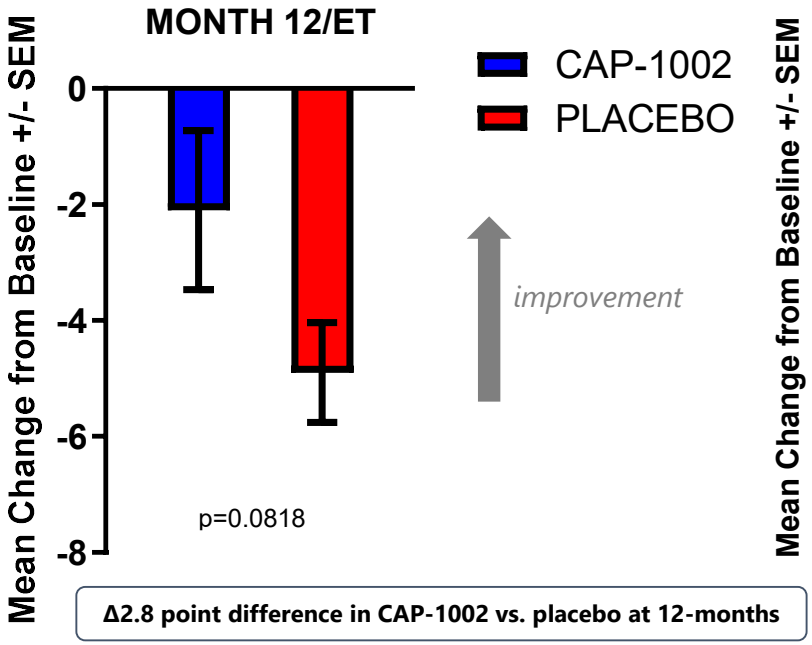


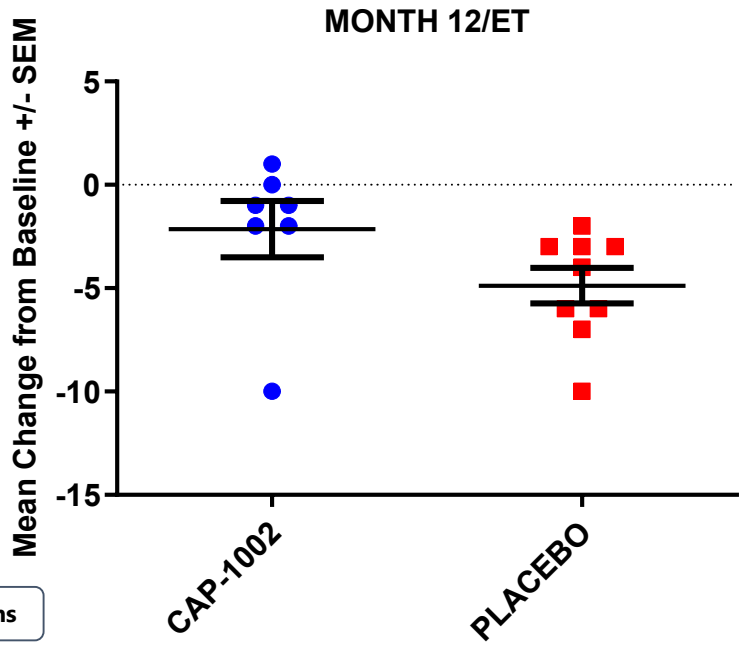


Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months

Clinically Meaningful Changes in Mid-Level PUL 1.2

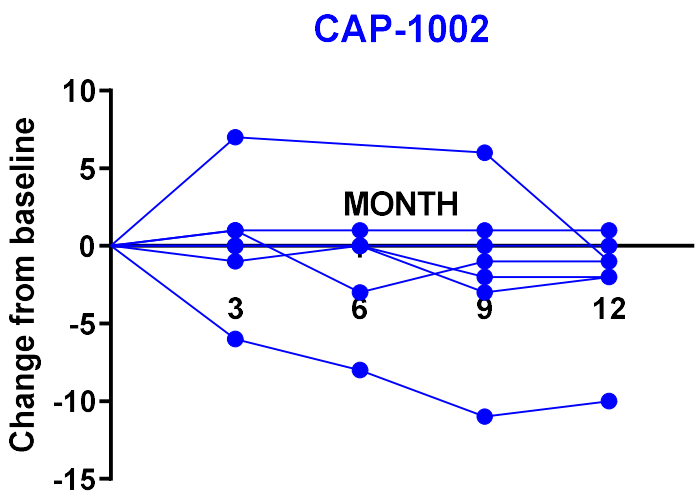
Similar changes shown in HOPE-Duchenne

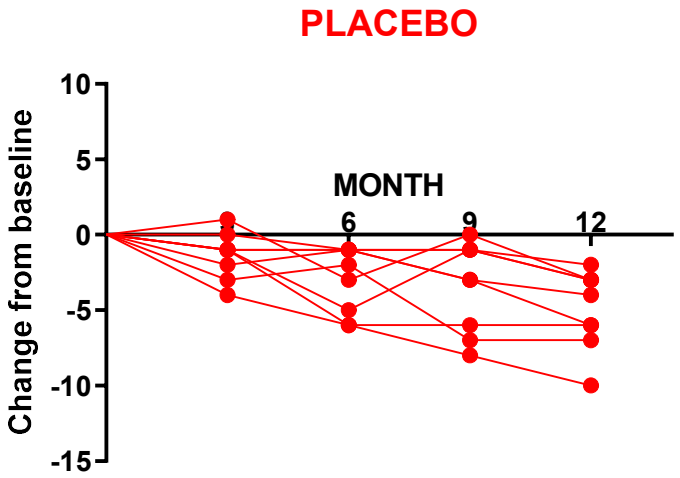




Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months
P-values are nominal values unadjusted for multiple testing

Individual Patient Data: PUL 1.2
(Mid Level)





Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months

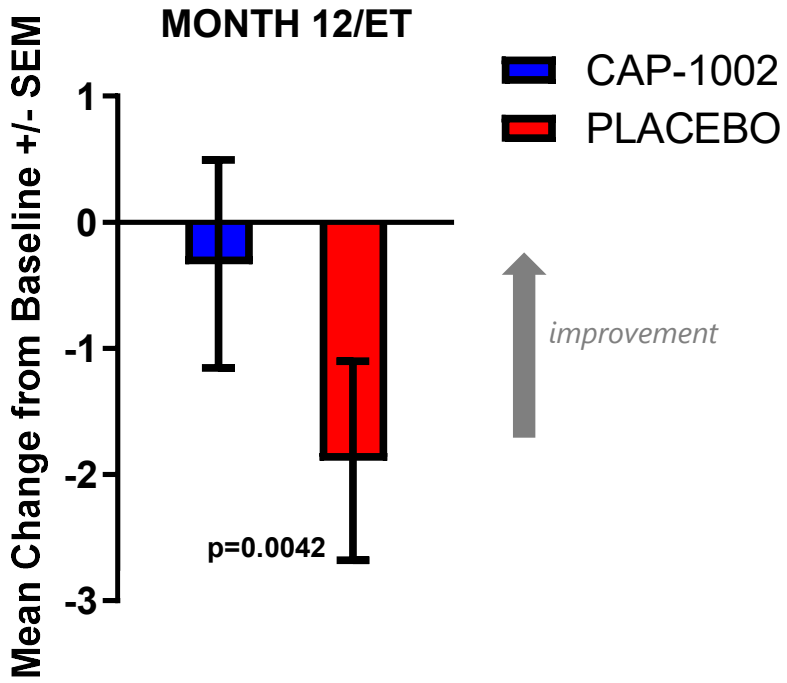
Cardiac Function

Measured by MRI:

LV Ejection Fraction (%)
LV End-Systolic Volume & LV End-Diastolic Volume
CK-MB (% of total CK)

Improvements in LV Ejection Fraction (%) Observed

Potential for long-term preservation of cardiac function



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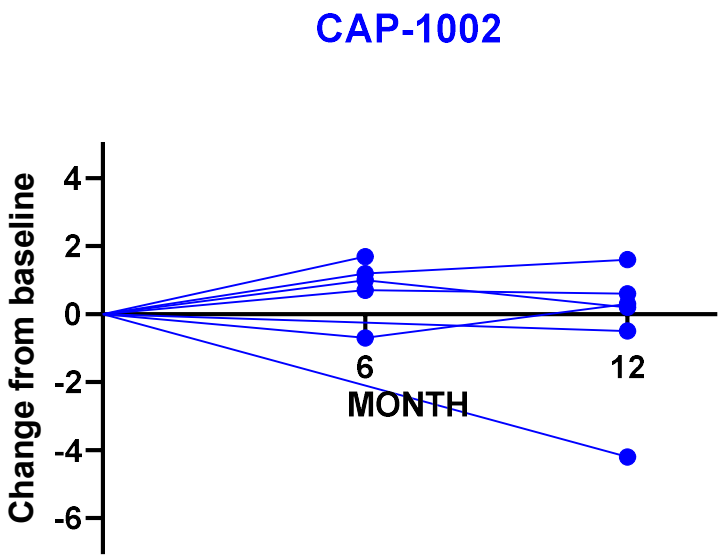
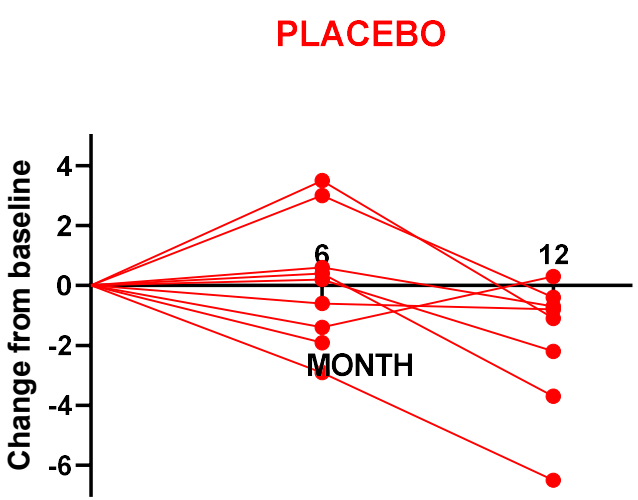
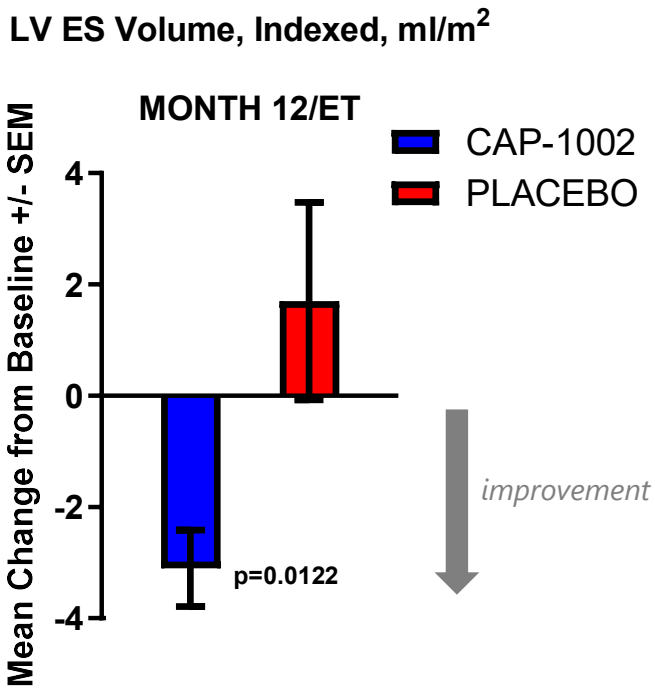
Individual Patient Data: LV Ejection Fraction (%)

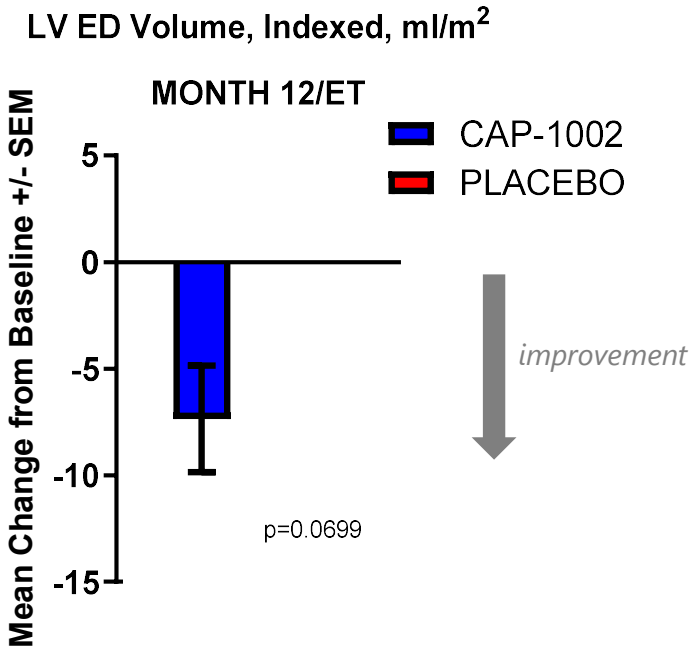




Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months

Improvements in LV End-Systolic Volume & LV End-Diastolic Volume Observed





Has been used as a surrogate endpoint for approval in adult heart failure

Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months
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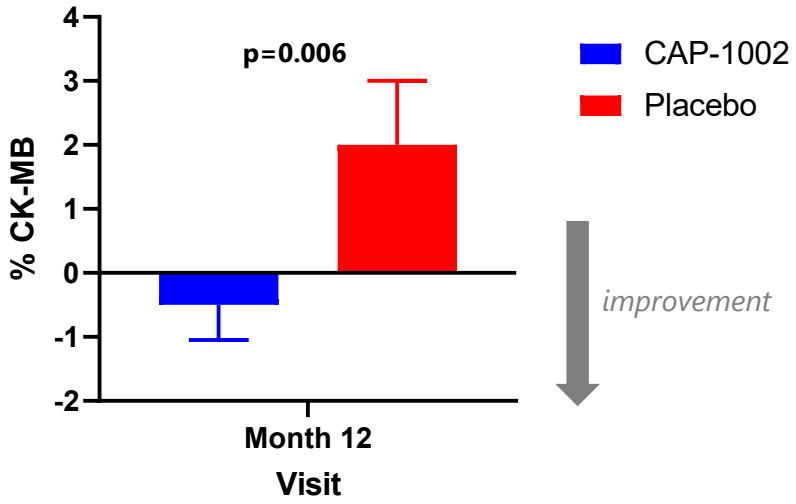
Improvements in Creatine Kinase MB / Total Creatine Kinase (%) Observed

Enzyme associated with breakdown of cardiac muscle cells



Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months
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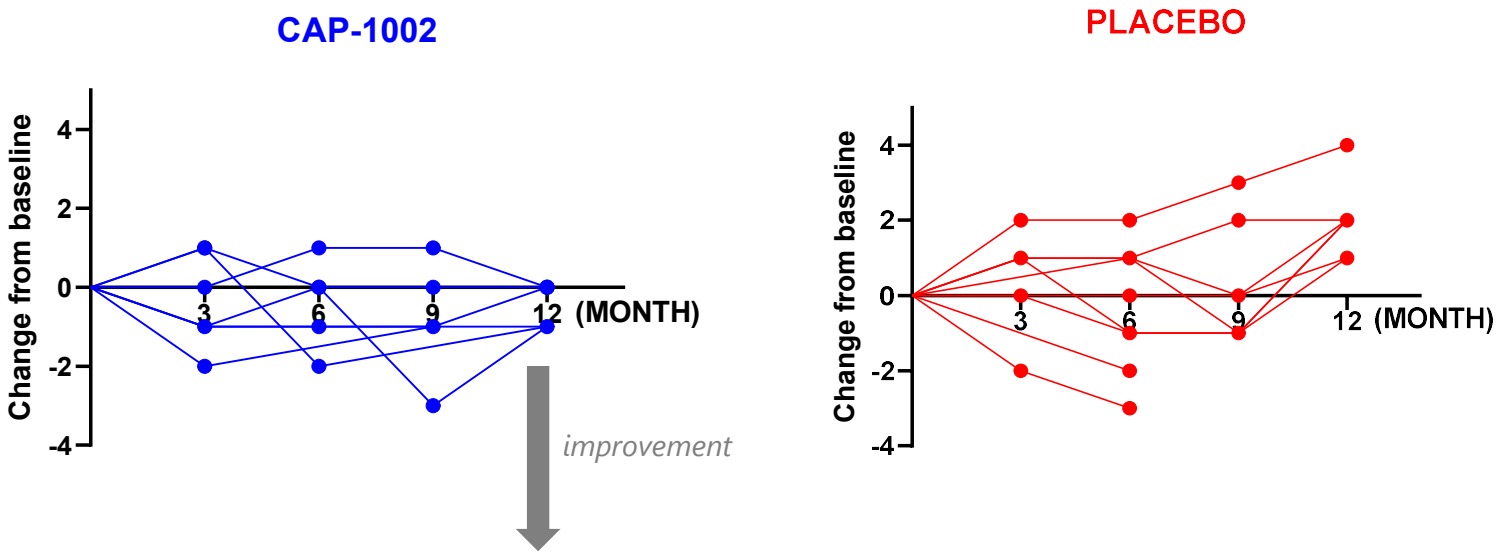
Individual Patient Data:
Creatine Kinase MB / Total Creatine Kinase (%)

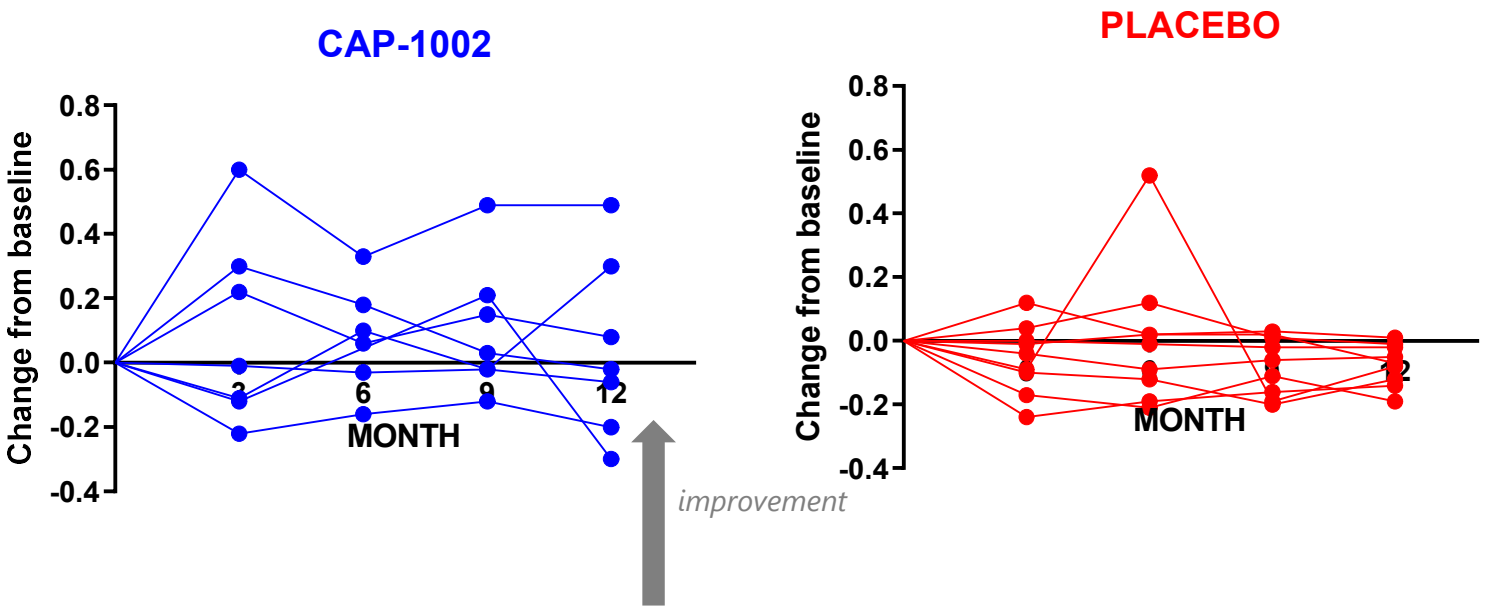


Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months

Respiratory Function

Measured by:
Inspiratory Flow Reserve
Peak Expiratory Flow (% predicted)

Improvements Observed in Inspiratory Flow Reserve
Individual Patient Data

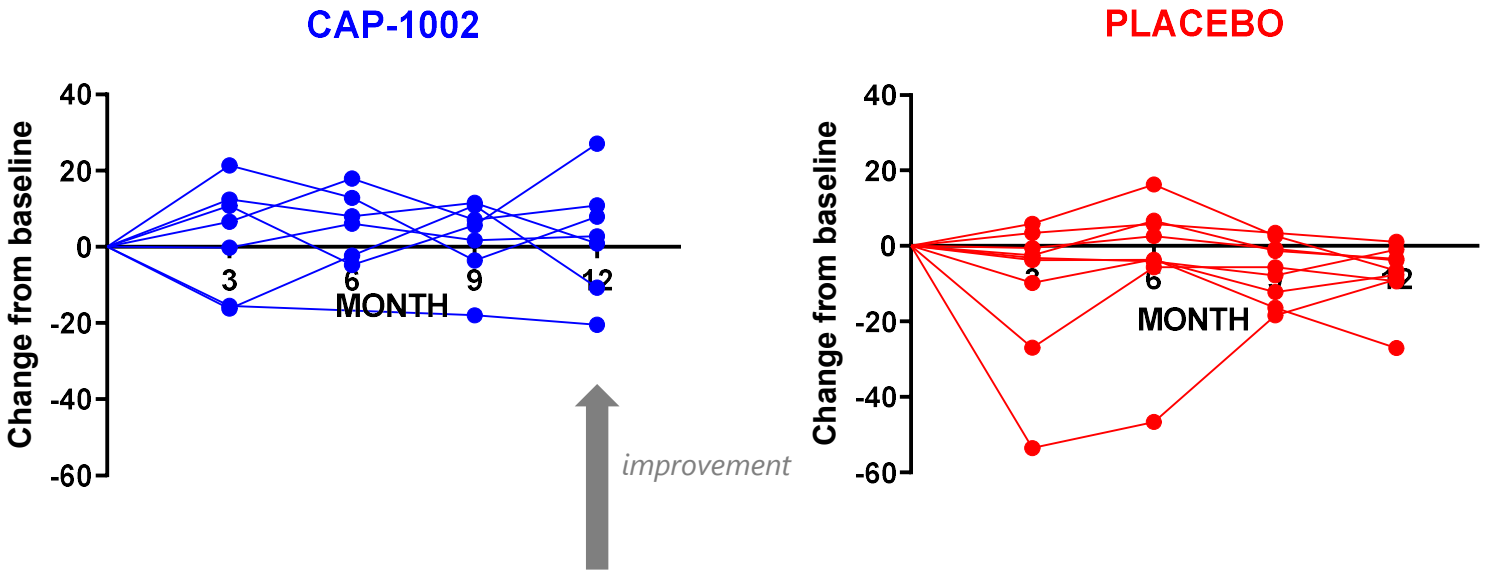


Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months

Improvements Observed in Peak Expiratory Flow (% predicted)

Individual Patient Data

Suggested by FDA in original RMAT meeting as secondary endpoint



Comparisons treated vs. placebo using mixed model repeated measures ANOVA with covariates at baseline, 3 months, 6 months, 9 months and 12 months

Safety Summary

HOPE-2 Safety Results

- **A total of 69 infusions (CAP-1002 or placebo) were performed in HOPE-2**
  - Generally safe and well tolerated throughout the study
  - With the exception of hypersensitivity reactions, no safety signals were identified
  - In late December 2018, Capricor put a voluntary hold on dosing after two patients in the HOPE trials had a serious adverse event in the form of a hypersensitivity reaction.
  - Possibly linked to excipients (e.g. DMSO)

HOPE-2 Safety Mitigation Efforts

- To reduce the risk of such future adverse events, Capricor initiated a commonly used pre-medication strategy including intravenous steroids and antihistamines to prevent or mitigate potential allergic reactions during the administration.

- Since the initiation of the pre-treatment regimen, 42 infusions of investigational drug (CAP-1002 or placebo) were administered with only one hypersensitivity reaction that required an overnight observation of the patient

Conclusions and Future Directions

Conclusions:

- First placebo-controlled trial showing upper limb functional improvements in **non-ambulant DMD patients**
- Directionally consistent improvements in strength, respiratory and cardiac endpoints
- First ever study in DMD that correlates cardiac functional stabilization with reduction of a biomarker of myocardial cell damage
- Consistent results shown pre-clinically, Phase I/II and Phase II

Moving Forward:

- Requested End-of Phase 2 Meeting with FDA to discuss pathway to approval
- Engaged global CMO for scale-up of manufacturing of CAP-1002
- Expeditious initiation of open label extension

DMD Advisory Board

Craig McDonald, M.D. (National PI)	University of California at Davis (USA)
Michelle Eagle, Ph.D., M.Sc., MCSP	Atom International Ltd (UK)
Richard Finkel, M.D.	Nemours Children's Hospital (USA)
Pat Furlong	Parent Project Muscular Dystrophy (USA)
Kan Hor, M.D.	Nationwide Children's Hospital (USA)
John Jefferies, M.D.	Cincinnati Children's Hospital Medical Center (USA)
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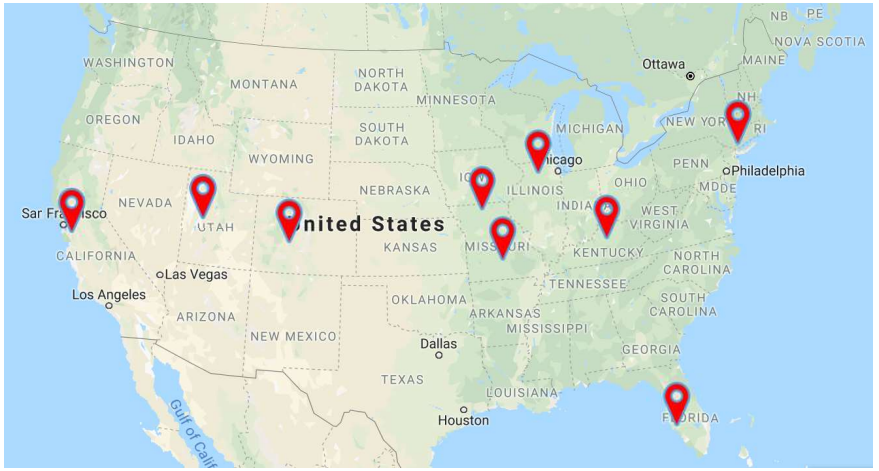
Thomas Voit, M.D.	University College London (UK)
Lee Sweeney, Ph.D.	University of Florida (USA)
Michael Taylor, M.D., Ph.D.	Cincinnati Children's Hospital Medical Center (USA)

Acknowledgements

- **All patients and their families who participated in the HOPE-2 Study**
- Parent Project Muscular Dystrophy
- Coalition Duchenne
- CureDuchenne
- HOPE-Duchenne (Phase I/II) was funded with the support of CIRM

- Craig McDonald, MD (UC Davis)
- Cuixia Tian, MD (CCHMC)
- Russell Butterfield, MD (University of Utah)
- Richard Finkel, MD (Nemours Children's Hospital)
- Joanne Janas, MD (Children's Hospital of Colorado)
- Matthew Harmelink, MD (Children's Hospital of Wisconsin)
- Arun Varadhachary, MD (Washington University, Saint Louis Children's Hospital)
- Brenda Wong, MD (University of Massachusetts)
- Katherine Mathews, MD (University of Iowa, Children's Hospital)



Thank you

Questions and Answer