BETTER DELIVERY, BETTER THERAPY
Powerful Drug Delivery Solutions

INVESTOR PRESENTATION

SEPTEMBER 2024

NASDAQ: TFFP

Safe Harbor Statement

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This document contains forward-looking statements concerning TFF Pharmaceuticals, Inc. ("TFF", "TFF Pharmaceuticals", the "Company," "we," "us," and "our"). The words "believe," "may," "will," "potentially," "estimate," "continue," "anticipate," "intend," "could," "would," "project," "plan," "expect" and similar expressions that convey uncertainty of future events or outcomes are intended to identify forward-looking statements. These forward-looking statements include, but are not limited to, statements concerning the following:

- The benefits of our TFF platform;
- Advancement of TFF TAC and TFF VORI into potentially registration-enabling studies;
- TFF TAC's and TFF VORI's substantial market opportunity;
- The expectation that the further data from the ongoing Phase 2 clinical trial for TFF TAC will be consistent with the data readouts for such product candidate to date; and
- Our exploration of strategic alternatives for TFF VORI, including partnering opportunities, collaborations, and government-based funding sources.

Those forward-looking statements involve known and unknown risks, uncertainties and other factors that could cause actual results to differ materially. Among those factors are: (i) the risk that the further data from the ongoing Phase 2 clinical trial for TFF TAC will not be favorably consistent with the initial data readouts, (ii) the risk that the Company may not be able to obtain additional working capital with which to continue the Phase 2 clinical trial and or advance to the initiation of registration-enabling studies, for TFF TAC as and when needed, (iii) the risk that we may not be able to advance to registration-enabling studies for TFF TAC, (iv) the risk we may not be successful in our pursuit of strategic alternatives for TFF VORI; (v) success in early phases of pre-clinical and clinicals trials do not ensure later clinical trials will be successful; (vi) no drug product incorporating the TFF platform has received FDA pre-market approval or otherwise been incorporated into a commercial drug product, (vii) the Company has no current agreements or understandings with any large pharmaceutical companies for the development of a drug product incorporating the TFF platform, and (viii) those other risks disclosed in the section "Risk Factors" included in the Company's Annual Report on Form 10-Q filed with the SEC on August 14, 2024 and subsequently filed reports. TFF Pharmaceuticals cautions readers not to place undue reliance on any forward-looking statements. TFF Pharmaceuticals does not undertake, and specifically disclaims, any obligation to update or revise such statements to reflect new circumstances or unanticipated events as they occur, except as required by law.

This document contains only basic information concerning TFF. Because it is a summary it does not contain all of the information you should consider before investing. Please refer to our reports and registration statements on file with the SEC for more comprehensive information concerning TFF Pharmaceuticals.

Investment Highlights

Thin Film Freezing (TFF)

- Unique technology for generation of dry powder formulations optimized for inhalational delivery
  - Driving efficacy and minimizing systemic toxicities
- Over 170 patents issued or pending

Strong Internal Pipeline

- TFF TAC (Tacrolimus Inhalation Powder) for lung transplantation with **>$2 billion annual peak sales potential**
- TFF VORI (Voriconazole Inhalation Powder) for serious pulmonary fungal infections with **>$1 billion annual peak sales potential**

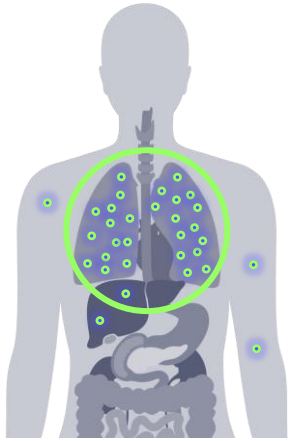
Experienced, Accomplished Management

- CEO Harlan Weisman, M.D. – >30 years of senior executive healthcare experience at both industry leaders and earlier-stage firms
- Talented, industry recognized leaders in senior research and development, and scientific advisory positions along with Board of Directors

Catalysts – Recent & Upcoming

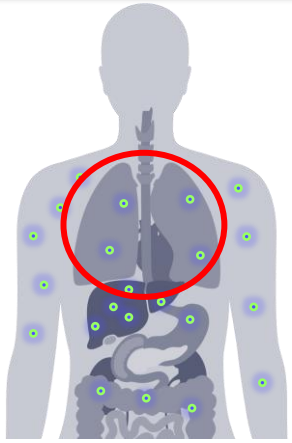
- Favorable efficacy, safety and tolerability reported in both programs
- 2025Q2 TFF TAC initial data in new randomized Phase 2 trial
- **2025Q4 TFF TAC top-line data in new Phase 2 trial**
- TFF VORI Phase 3 ready asset – exploring value realization opportunities

TFF - Inhaled



Higher efficacy, Lower adverse events

Existing Care - Oral



Lower efficacy, Higher adverse events

TFF Leadership

Harlan F. Weisman, M.D. | Chief Executive Officer

- More than 30 years experience as a senior healthcare executive
- Former CEO of Flame Biosciences and Coronado Biosciences
- Former Group Company Chairman and President of J&J Pharmaceutical R&D

Zamaneh Mikhak, M.D. | Chief Medical Officer

- Physician-scientist, board certified in Allergy/ Immunology, with extensive clinical, drug development, and basic and translational research experience
- Previously served in senior clinical research & development roles at Cogent Biosciences, Boston Pharmaceuticals, Kiniksa Pharmaceuticals

Kirk Coleman | Chief Financial Officer

- Over 20 years of financial and accounting experience
- Previously served as an executive officer of Steelhead Capital Management, LLC and Bios Partners, LP

Anthony Hickey, Ph.D. | Senior Scientific Advisor and Chairman of the Scientific Advisory Committee

- Professor Emeritus in Pharmacoengineering & Molecular Pharmaceutics at UNC Chapel Hill
- Former CEO of Cirrus Pharmaceuticals and CSO of Oriel Therapeutics; author of multiple texts on inhalation and pharmaceutical process engineering

Recent Government Collaborations

September 11, 2024
TFF Pharmaceuticals partners with Emory University and the Biomedical Advanced Research and Development Authority (BARDA) to test the feasibility of converting Emory's mRNA-based Cas13a antiviral against influenza A and B and SARS-CoV-2 into a dry powder formulation for more precise inhalational delivery, improved stability and widespread distribution without the need for cold-chain storage.

June 26, 2023
TFF Pharmaceuticals awarded $2.97 million by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institute of Health (NIH), to develop a universal influenza vaccine using the company's Thin Film Freezing technology.

May 4, 2023
TFF Pharmaceuticals enters into CRADA with the National Institute of Environmental Health Sciences (NIEHS) to develop dry powder formulations of Hyaluronan to prevent and treat respiratory diseases.

May 1, 2023
TFF Pharmaceuticals receives additional funding from Leidos to advance next generation countermeasures for military and healthcare personnel under the DARPA Personalized Protective Biosystems (PPB) program.

Recent grants and contracts with various government agencies is further validation of Thin Film Freezing's potential

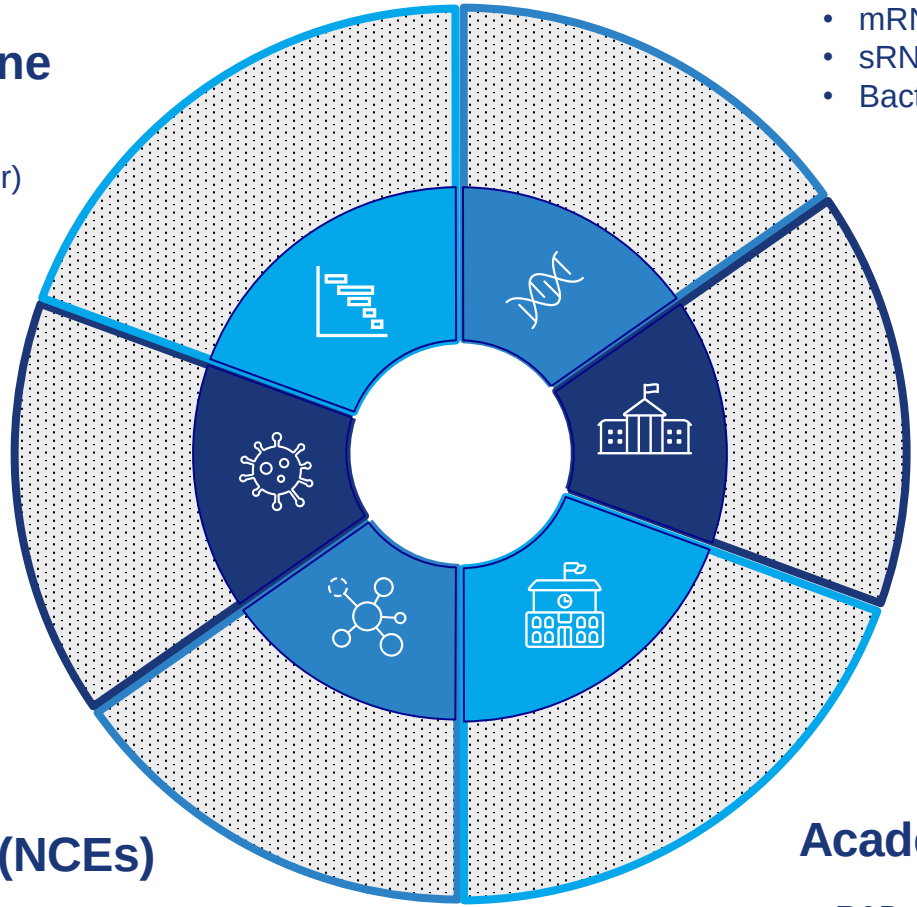
Business Development Opportunities for TFF's Platform

Internal Pipeline

- TFF TAC (inhaled tacrolimus dry powder)
- TFF VORI (inhaled voriconazole dry powder)

Biologics

- mRNA
- sRNA
- Bacteriophages
- mAbs
- Peptides
- Peptoids



Vaccines

- Reformulation and development of new vaccines for intranasal and inhalational delivery and eliminating need for cold chain supply requirements

Government

- NIEHS - CRADA agreement to develop dry powder formulations of Hyaluronan to prevent and treat respiratory diseases
- DARPA/Leidos - Personalized Protective Biosystem (PPB) contract to develop TFF-formulated medical countermeasures
- NIAID/Cleveland Clinic - SBIR Direct to Phase II grant to develop a mucosal universal influenza vaccine
- BARDA/Emory - mRNA contract to develop an inhaled influenza and COVID therapeutic

New Chemical Entities (NCEs)

- Formulating new product opportunities for both small and large molecules

Academia

- R&D collaborations with the Albert Einstein College of Medicine, Georgia Tech, Emory University and UPenn to develop biologics

Thin Film Freezing Process

TFF technology enables the generation of dry powder formulations optimized for inhalational delivery via an easy-to-use dry powder inhaler

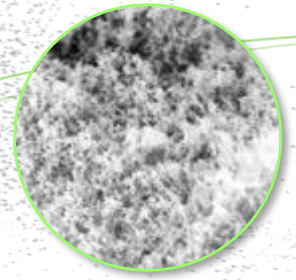
Bulk drug material

Proprietary freezing process

- ✓ Use proprietary combination of freezing rate and liquid surface to volume ratio
- ✓ Confers advantages in engineering particles for various routes of administration
- ✓ Stabilizes biologics not achievable with other process technologies

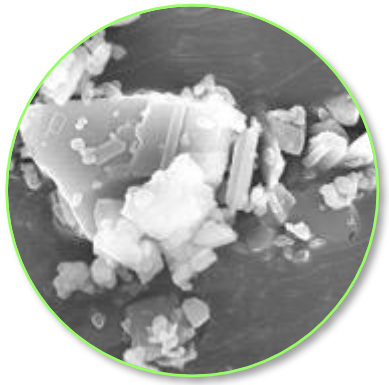
Drying and lyophilization

Brittle matrix powder

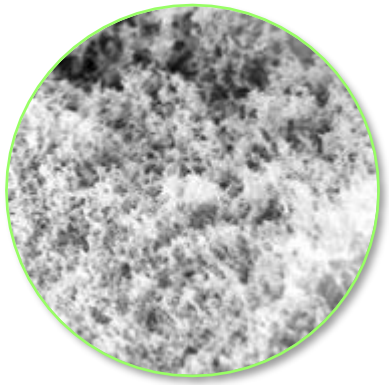


Inhalation Device for Lung Deposition

Bulk drug material



Brittle matrix powder



Off the shelf commercial dry powder inhaler

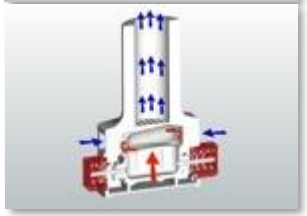
Removal of protective cap

Open mouthpiece to access capsule housing

Insert capsule into housing

Close mouthpiece

Actuate pushbuttons to pierce the capsule and inhale



Near Term Clinical Pathways and Market Perspectives

Asset	Platform	Indication	Pre-Clinical	Phase 1	Phase 2	Phase 3	Accomplished Milestones	Upcoming Catalysts
TFF TAC	Tacrolimus inhalation powder	Prophylaxis of organ rejection in lung transplant					• Positive initial P2 data reported Dec 2023 • Additional P2 data reported in March 2024 • Confirmatory P2 data released Aug 2024	• 2025Q2 TFF TAC initial data in new randomized P2 trial • 2025Q4 TFF TAC P2 top-line data in new randomized P2 trial
TFF VORI	Voriconazole inhalation powder	Serious pulmonary fungal infections					• Positive initial P2 data reported Dec 2023 • Additional P2 data reported in March 2024	• P3 ready asset • Evaluating value realization, partnership opportunities

- **TFF TAC top-line data from new randomized Phase 2 2025Q4**
- **>$2 billion peak sales opportunity for TFF TAC[1]**
- **>$1 billion peak sales opportunity for TFF VORI[1]**
- **>70 granted U.S. & International patents; patent applications for TFF TAC & TFF VORI with patent term extending to 2043**

1. Internal estimates

TFF TAC Clinical Development

Tacrolimus Inhalation Powder Program

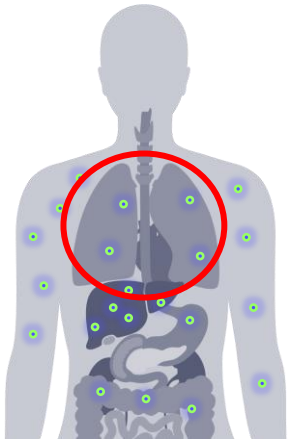
TFF TAC Direct-to-Lung Delivery

TFF TAC is intended to optimize lung immune suppression at diminished systemic exposures = fewer systemic toxicities

Oral Tacrolimus (existing SOC)

High unmet need – 50% mortality in 5 years[1] is driven by:

- **Too little immune suppression in the lung:**
  - Acute rejection
  - Chronic rejection
  - Chronic lung allograft dysfunction (CLAD)
- **Too much immune suppression in the blood:**
  - Chronic kidney disease
  - Infections
  - Post-transplant malignancies

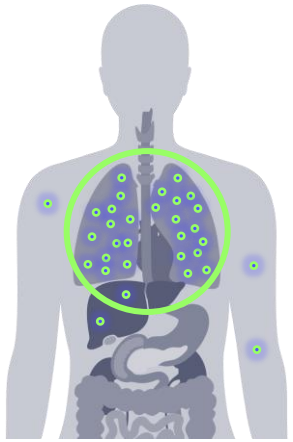


Lower efficacy, Higher adverse events

TFF TAC

TFF TAC vs. Oral Tacrolimus:

- 3-4 times systemic bioavailability
- 3-4 times lung levels compared to blood levels[2]
- Diminished blood level variability



Higher efficacy, Lower adverse events

~40,000 new and existing patients worldwide[3]

≥$2 billion peak TFF TAC global gross sales forecast[4]

1. J Heart Lung Transplant. 2019 October
2. Lung levels were compared with blood levels in the 28-day and 26-week toxicology studies in cynomolgus monkeys
3. UpToDate; OPTN, UNOS, and Transplant Literature
4. Internal estimates

TFF TAC Optimized Formulation

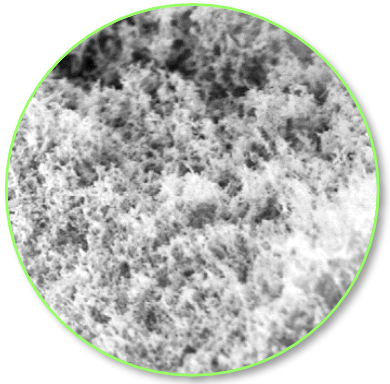
TFF technology enables TAC delivery to the lung for higher efficacy

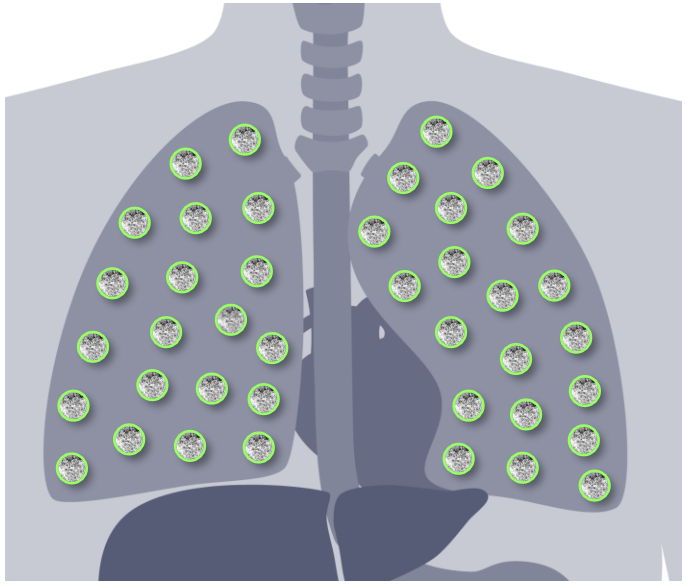
Optimal Formulation

Novel structure enables:

- Light, highly porous, high surface area material- cotton candy like
- Expedited dissolution in the lung:
  - Undetected as foreign body by immune system - higher concentration achieved in the lung
  - Rapid target engagement
- Far reach in the lung through optimized small particle size
- Higher TAC levels in lungs for a given blood level to lower toxicity

Brittle matrix powder





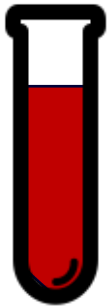
TFF TAC Key Takeaways

Key Takeaways

- **Phase 2 clinical data:**

20%

Lower doses of TFF TAC compared to oral Tacrolimus are sufficient to prevent rejection



84%

TFF TAC prevents rejection at reduced systemic tacrolimus blood levels, thus lowering the risk of systemic toxicity

Efficacy

- 14 patients transitioned from oral tacrolimus to TFF TAC; transition data available on 11 patients
- No evidence of acute rejection among 10 patients transitioned to TFF TAC per protocol:

10/10 patients who completed 12-week treatment chose to remain on TFF TAC and proceeded to long-term extension

Safety

- No mortality
- One TFF TAC discontinuation
- Majority of TEAEs were Grade 2 or lower in severity
- Maintenance of kidney function

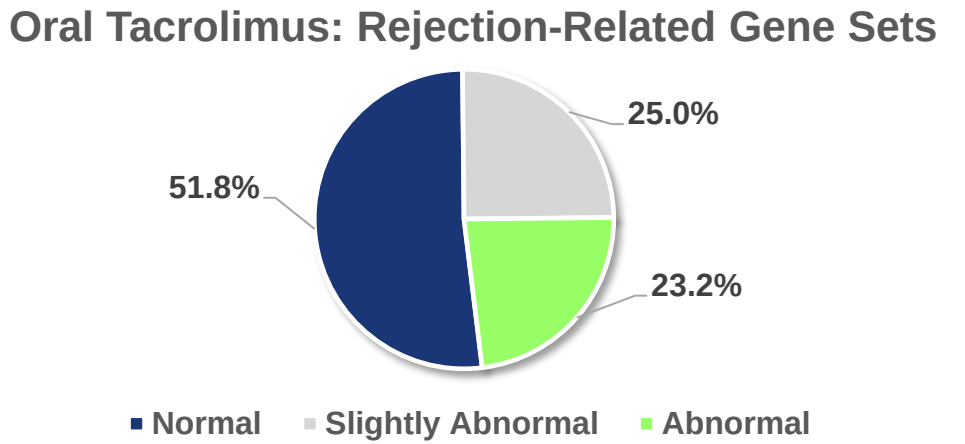
Data are from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/6/24

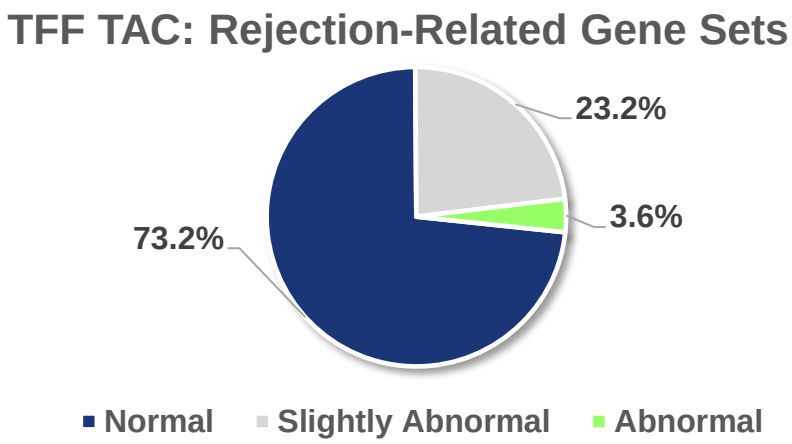
Confirmatory Biomarker Data Suggest TFF TAC Provided Sufficient Immune Suppression For Prevention of Rejection

Gene expression is a precursor to immune-based transplant rejection

- 6.5-fold (~85%) reduction in the number of abnormally expressed rejection-related gene sets after 12 weeks of treatment with TFF TAC
  - 23.2% abnormal on oral tacrolimus to only 3.6% abnormal on TFF TAC (85% reduction) in the expression of rejection-related genes

- Donor-specific antibodies (DSA), which drive antibody-mediated rejection and are generated when there is insufficient systemic immune suppression, were negative for the first 8 patients on oral tacrolimus, and DSA remained negative after 12 weeks of treatment with TFF TAC

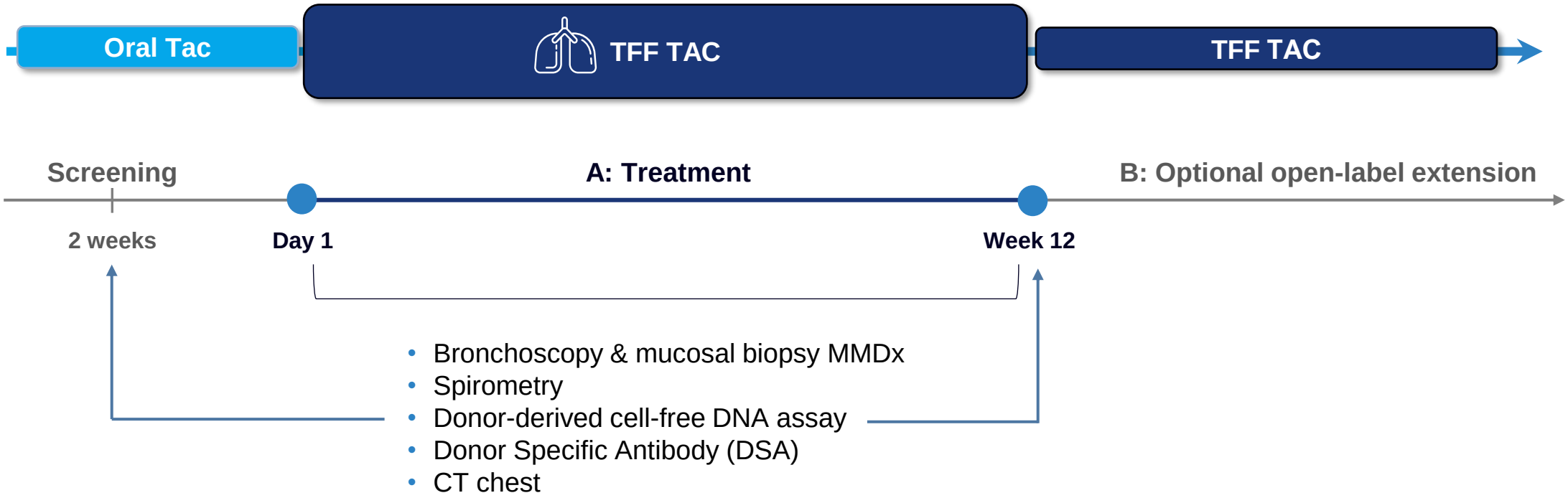




Data are from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/6/24

TFF TAC: Phase 2 Study Design

- **Design:** Open label study of TFF TAC in lung transplant recipients requiring reduced TAC blood levels due to renal toxicity
- **Duration:** Part A: 12 weeks; Part B: long-term extension
- **Endpoints:** Safety & tolerability, renal function, acute allograft rejection



TFF VORI Clinical Development

Voriconazole Inhalation Powder Program

TFF VORI: Summary of Results

IPA is a pulmonary fungal infection with ~30% mortality in 12 weeks

Efficacy

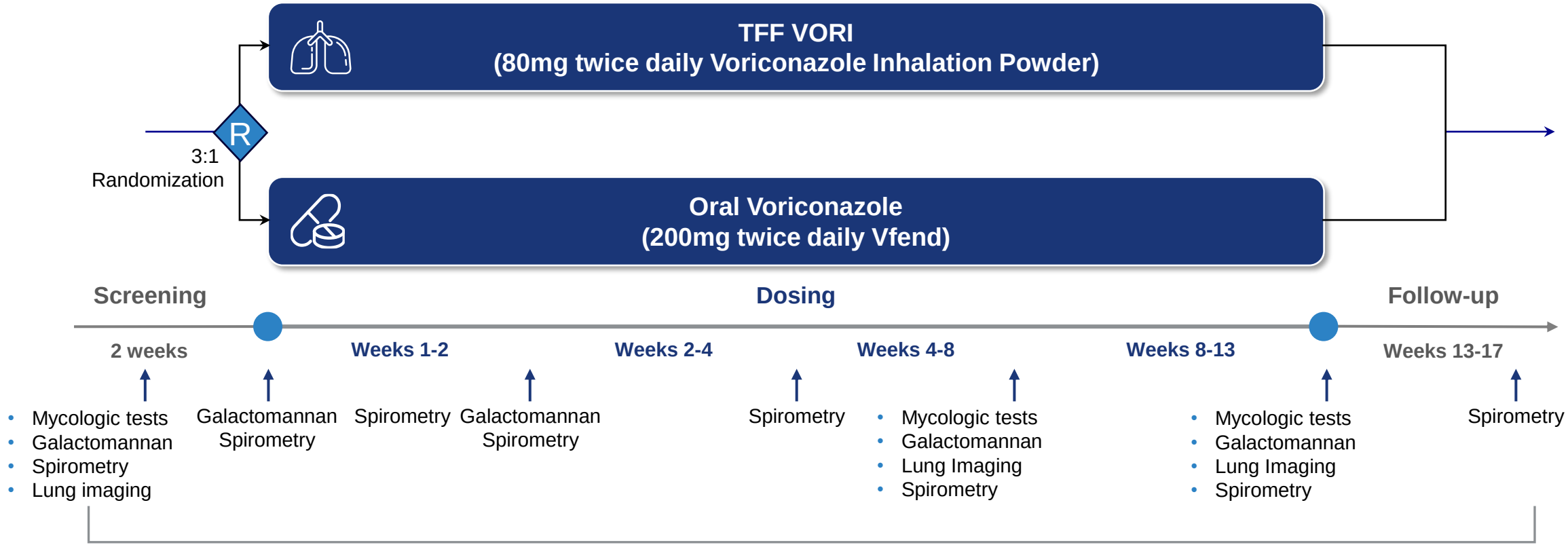
- Of the six patients treated for IPA with TFF VORI for at least 12 weeks:
  - Five patients achieved a clinical response (improvement in signs, symptoms and/or spirometry)
  - Five patients achieved a mycologic response (presumed or proven)
  - Three of four patients achieved a radiologic response (4 patients with abnormal baseline and follow up chest CT)
  - No need for continued anti-fungal use after treatment with TFF VORI in all six patients

Safety

- Of the 9 patients treated with TFF VORI for any length of time with follow-up safety data:
  - No mortality
  - One TFF VORI discontinuation due to an unrelated AE of COVID infection that required intubation
  - Majority of TEAEs were Grade 2 or lower in severity and deemed unrelated
  - No hepatic toxicity
  - No visual disturbances

TFF VORI: Phase 2 Trial Design

- **Design:** Open label randomized study; TFF VORI vs. oral voriconazole
- **Duration:** 13 weeks of treatment
- **Endpoints:** Safety/tolerability, clinical response, radiologic response, mycologic response, all-cause mortality



TFF VORI: Expanded Access Program (EAP)

- The Expanded Access Program (EAP) enrolls patients with the following diagnoses who have limited or no other treatment options or who have had an unfavorable response to adequate standard of care therapy:
  - Pulmonary aspergillosis:
    - Invasive pulmonary aspergillosis (IPA)
    - Chronic pulmonary aspergillosis (CPA)
    - Allergic bronchopulmonary aspergillosis (ABPA)
    - Aspergillus tracheobronchitis
    - Aspergillus bronchoanastomotic infection
  - Voriconazole responsive pulmonary fungal infections
- Yielded valuable positive results for the non-IPA cohorts as well

TFF Board and Advisors

Board of Directors

Harlan F. Weisman, M.D.
Chief Executive Officer

Thomas King
Director

Catherine Lee, J.D.
Director

Robert S. Mills
Director

Brandi Roberts
Director

Stephen Rocamboli
Director

Scientific Advisory Board

Anthony Hickey, Ph.D.
Senior Scientific Advisor, and Chairman of the Scientific Advisory Committee

David N. Cornfield, M.D.
Professor of Pulmonary Medicine, Stanford University

Prof. David Denning, FRCP, FRCPath, DCH, FMedSci
Professor of Infectious Diseases, University of Manchester

Jay Peters, M.D.
Chief of Pulmonary and Critical Care Medicine, University of Texas Health Science Center at San Antonio

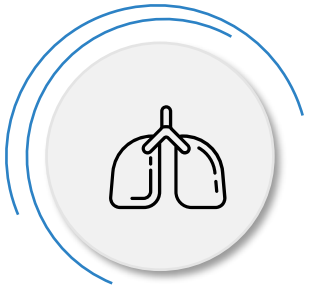
Ted M. Ross, Ph.D.
Professor, Center for Vaccines and Immunology, Department of Infectious Diseases, University of Georgia

Mike Saag, M.D.
Professor of Medicine, University of Alabama at Birmingham

Drew Weissman, M.D., Ph.D.
Nobel Laureate; Roberts Family Professor, Vaccine Research at the Perelman School of Medicine, University of Pennsylvania

Key Takeaways

Revolutionary platform enabling inhalable drug delivery across the entire spectrum of pharmaceutical agents, targeting combined $3 billion+ markets – current market capitalization ~$5 million

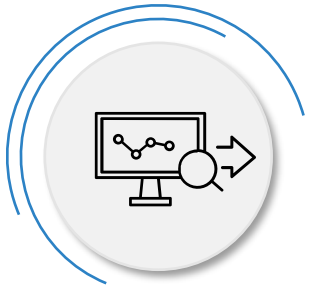


Proprietary Lung Drug Delivery Process

- **Two proprietary drugs with combined >$3 billion peak sales potential**
- Novel molecular composition enables optimal drug delivery and activation

Strong Internal Pipeline

- 2025Q2 TFF TAC initial data in new randomized P2 trial
- 2025Q4 TFF TAC P2 top-line data
- TFF VORI P3 ready asset – exploring value realization, partnership opportunities



Broadly Applicable Platform

- Opportunities in biologics and vaccines
- Recent grants and contracts with government agencies further validates Thin Film Freezing's potential

Experienced Management; IP Protection

- Proven management team with large pharma experience & multiple successful exits
- Over 170 patents issued or pending

Investor & Media Relations:

CORE IR
Jason Nelson
investorinfo@tffpharma.com

TFF TAC Additional Information

Preclinical Data, Phase 1 Study Design, and Phase 1 Data

TFF TAC: Preclinical and Phase 1 provided safety, tolerability, and pharmacokinetic data and enabled Phase 2 planning

Preclinical POC Data:

Inhaled tacrolimus was as efficacious in the prevention of rejection as oral tacrolimus in a rat trachea transplant model at reduced systemic exposures.[1]

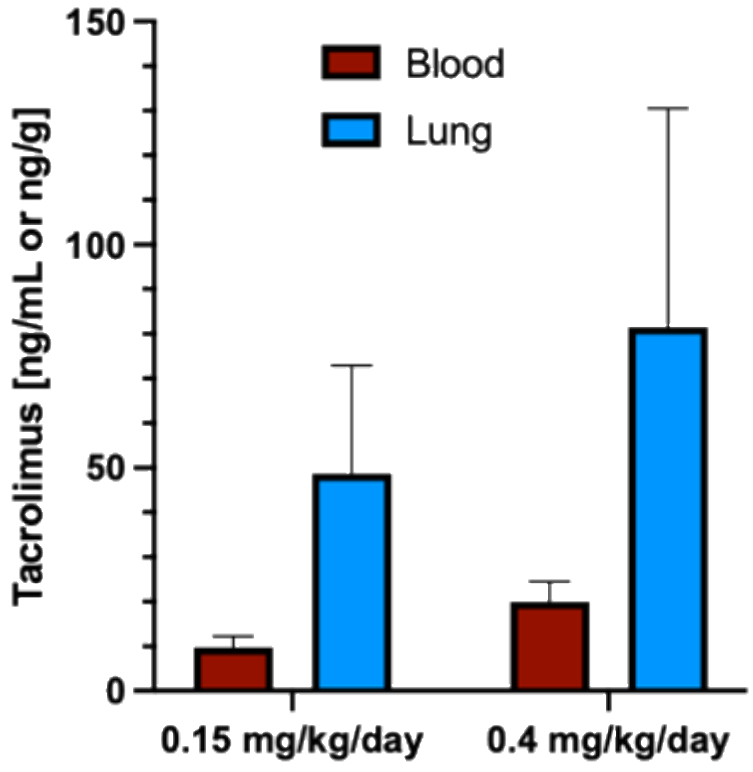
Phase 1 Data:

- Successfully completed single and multiple ascending dosing of TFF TAC in healthy subjects in Phase 1 trial
- Doses up to 5 mg (single dose) and 2 mg (repeated dose) daily were generally well tolerated

Schrepfer et al. American Journal of Transplantation. *2007*

TFF TAC Preclinical Data – Improved Drug Delivery to the Lung

Favorable lung distribution



Internal data from 28-day toxicology study in cynomolgus monkeys

Phase 1 Study Design

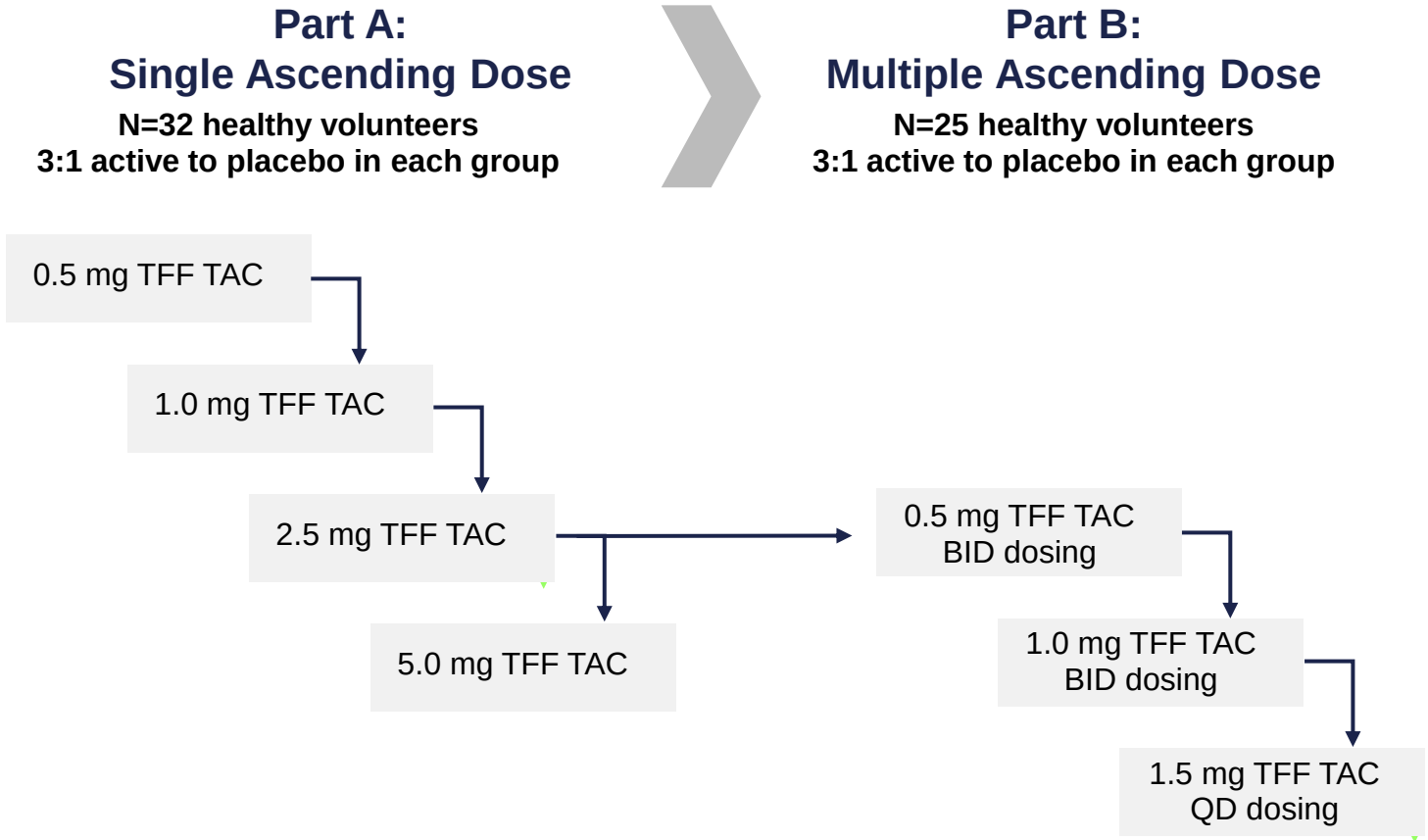
Study Overview

Design:

- Randomized, double-blind, placebo-controlled study of TFF TAC in 57 healthy adult volunteers
- Single ascending dose (SAD) and multiple ascending dose (MAD) phases

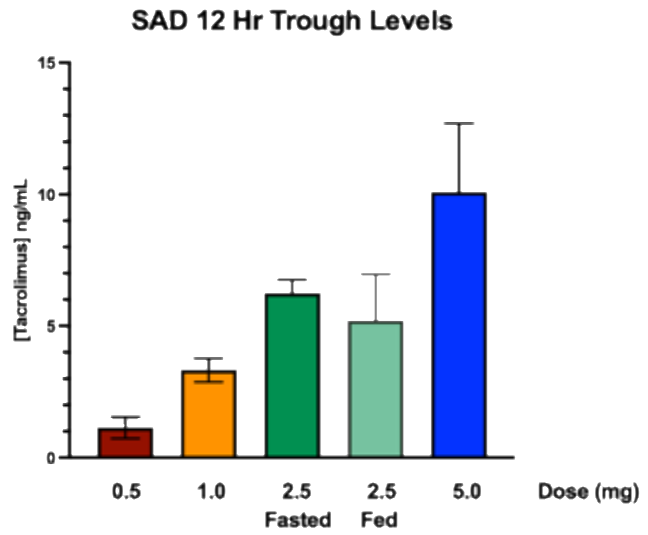
Endpoints:

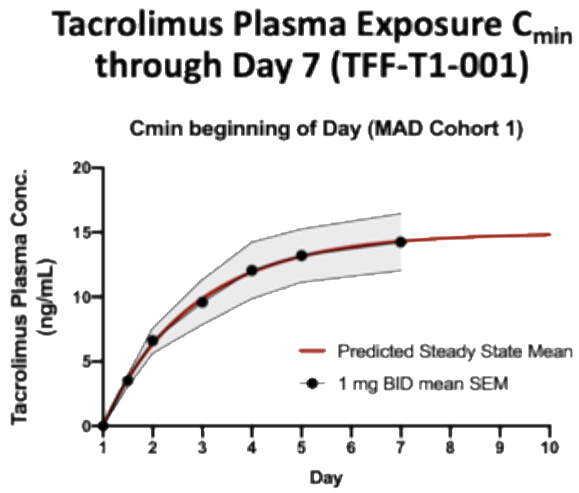
- Safety and tolerability
- Pulmonary function
- Pharmacokinetics



Phase 1 Results Showed TFF TAC was Safe and Well-Tolerated and Had Systemic Bioavailability

Pharmacokinetics





Safety

- Overall, TFF TAC was safe and well-tolerated
- No dose-related increase in overall treatment-emergent adverse events (TEAEs) was observed

TFF TAC demonstrated favorable safety and tolerability with efficient pharmacokinetics

https://www.fda.gov/media/142632/download

TFF TAC: Baseline Characteristics and Demographics

Patient	Age (years)	Sex	Race	Years since transplant	CLAD	Years with kidney disease	Time on TFF Tac (weeks)	Disposition
Pt 1	73	M	W	9	No	5	66.1	Completed Part A; proceeded to Part B
Pt 2	73	F	W	8	No	6	57.1	Completed Part A; proceeded to Part B
Pt 3	68	M	W	5	No	4	50.1	Completed Part A; proceeded to Part B
Pt 4	67	F	W	3	No	2.5	37.1	Completed Part A; proceeded to Part B
Pt 5	64	M	W	3	No	2.5	29.0	Completed Part A; proceeded to Part B
Pt 6	52	F	W	23	No	7	26.1	Completed Part A; proceeded to Part B
Pt 7	41	F	W	0.75	No	0.5	23.0	Completed Part A; proceeded to Part B
Pt 8	56	M	NH	1.25	No	1	6.0	Study drug discontinued in Part A
Pt 9	29	M	W	1.5	No	1.5	13.6	Completed Part A; proceeded to Part B
Pt 10	55	M	W	4.5	No	4.5	12.0	Completed Part A; proceeded to Part B
Pt 11	73	M	W	3	No	2.5	7.0	In Part A
Pt 12	69	M	W	10	No	N/A	1.0	In Part A

CLAD: chronic lung allograft dysfunction
W: white; F: female; M: male; NH: Native Hawaiian
N/A: not available

Data is from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/5/24

Data Suggest TFF TAC Prevents Rejection at a Fraction Of Oral Tacrolimus Dose With Reduced Systemic Exposures

Patient	Stable daily oral Tacrolimus dose (mg)	Tacrolimus trough level on stable oral Tacrolimus (ng/ml)	Initial TFF TAC dose (mg)	Last trough level on initial dose of TFF TAC (ng/ml)	Stable TFF TAC dose (mg)	Tacrolimus trough blood levels on stable TFF TAC (ng/ml)	Time on stable dose (weeks)
Pt 1	5	5.6	1.5	5.1	0.75	2.4-3.0	55
Pt 2	1	3.9	1.5	13.6	0.25	2.2-3.9	56
Pt 3	5.5	4.6	0.75	3.2	0.75	4.4	11
Pt 4	2	4.5	0.75	3.9	0.5	2.6-3.8	28
Pt 5	3	5.1	0.5	4.0	0.375	2.4-3.1	25
Pt 6	3	3.8	0.75	4.8	0.5	3.2-3.6	10
Pt 7	13	5.4	1.5	6.2	1.5	4.5-6.9	23
Pt 8	6	8.9	0.5	2.1	NA	NA	NA
Pt 9	1	6	0.25	3.9	0.25	4.7-8.5	11
Pt 10	9	4.9	0.75	3.5	0.75	2.5-3.5	12
Pt 11	1	5.1	0.25	1.4	0.5	4.2-5.7	6
Pt 12	3	9.1					

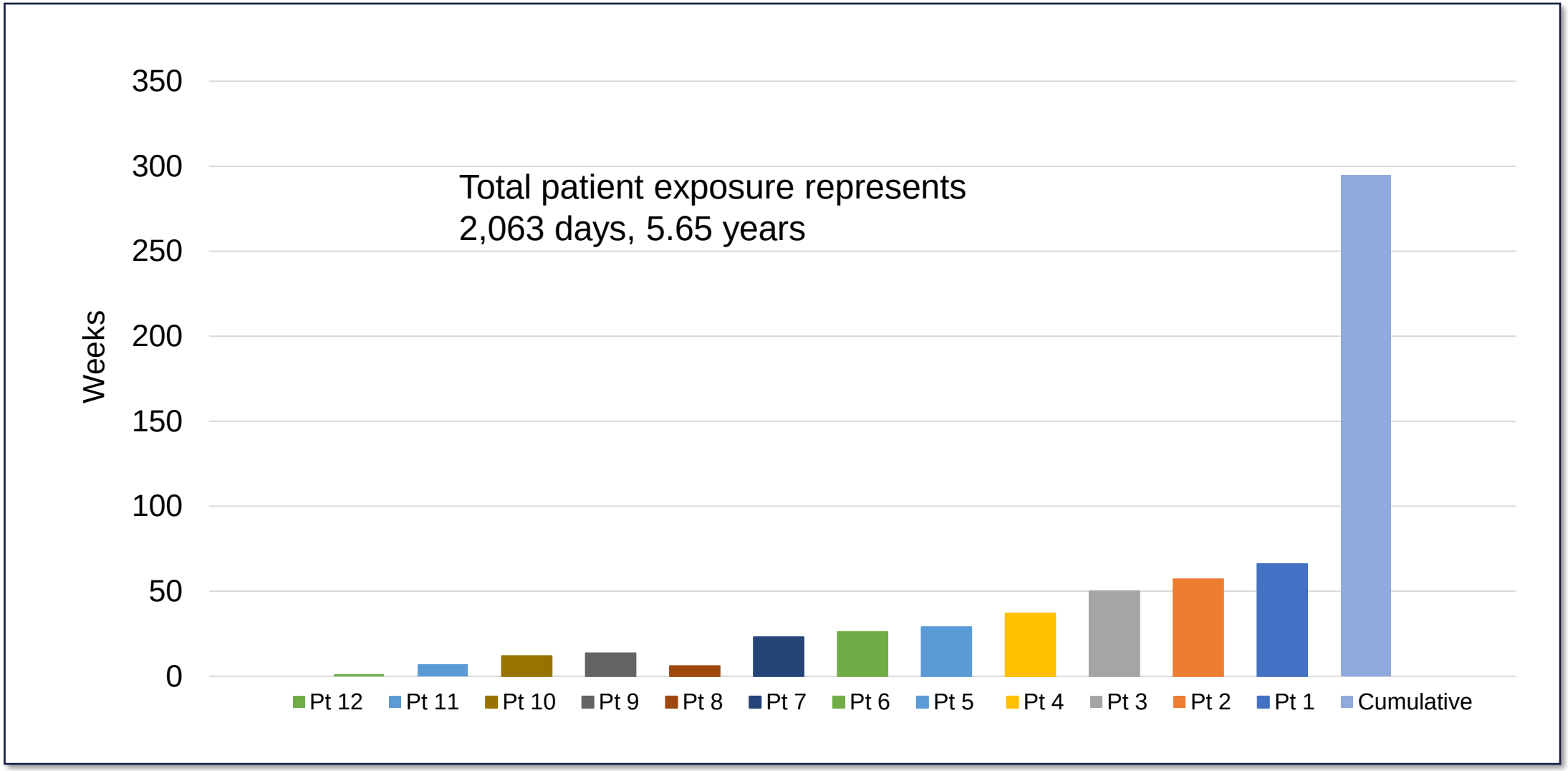
Mean Stable TFF TAC Dose / Mean Stable Oral Tacrolimus Dose	Stable Trough Tacrolimus Blood Levels: TFF TAC / Oral Tacrolimus
~20%	~84%

Variability in metabolism contributes to individualized dosing with oral Tacrolimus and TFF TAC

NA: not applicable; Blank indicates data not yet available

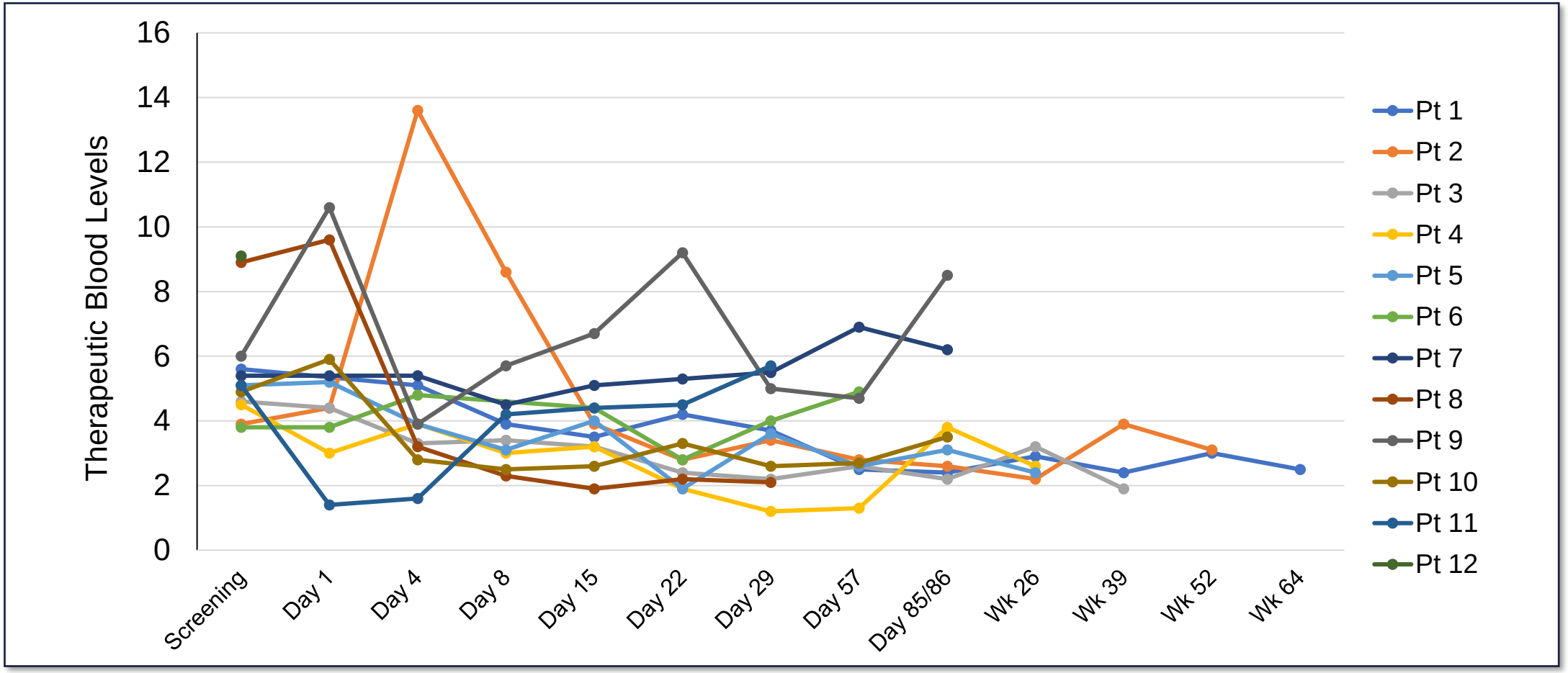
Data is from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/5/24

TFF TAC: Total Patient Exposure



Data is from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/5/24

TFF TAC: Blood Trough Levels

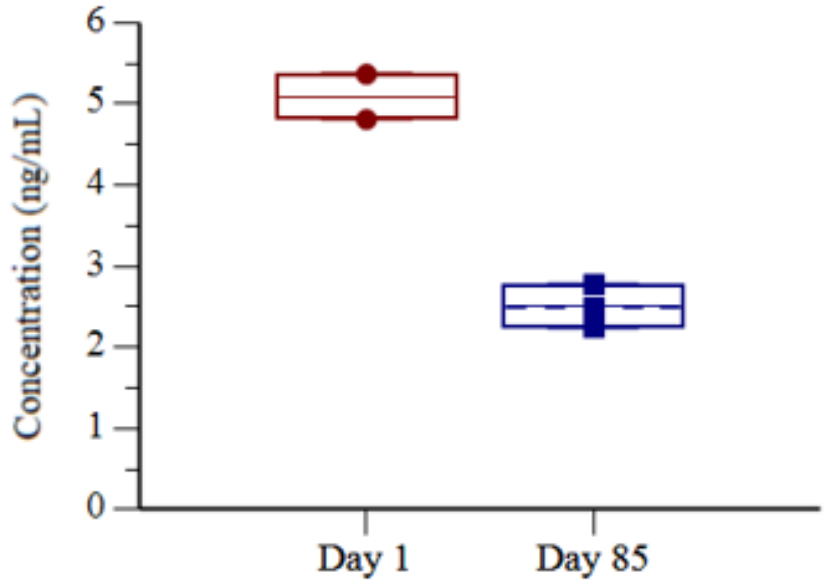


TFF TAC dose is reduced over time to protect the kidneys resulting in diminished tacrolimus blood levels

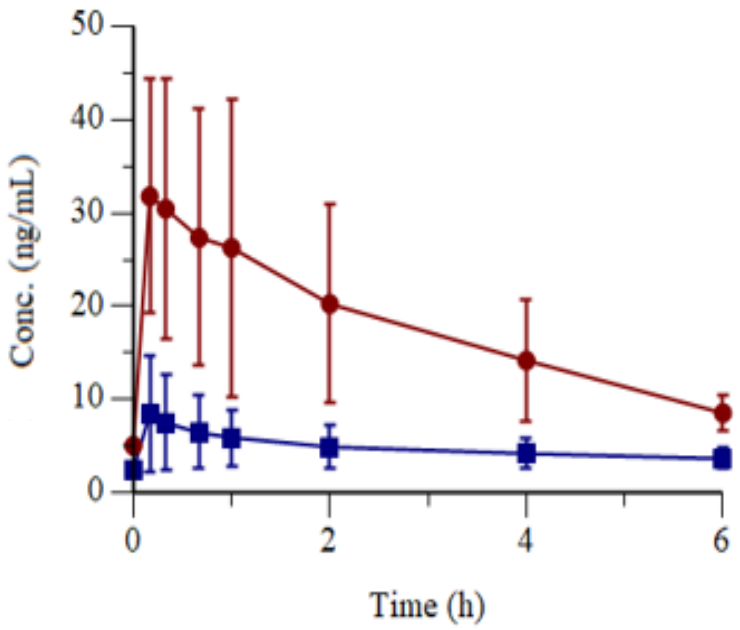
Data is from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/5/24

Lower Doses of TFF TAC Result in Diminished Systemic Exposures and Less Pharmacokinetic Variability with Chronic Dosing

Trough Tacrolimus in Blood



Mean Tacrolimus in Blood- 6hr AUC* Curve



Day 1 doses:
Patient 1=1. 5mg
Patient 2=1.5 mg
Patient 3=0.75 mg

Day 1
Day 85

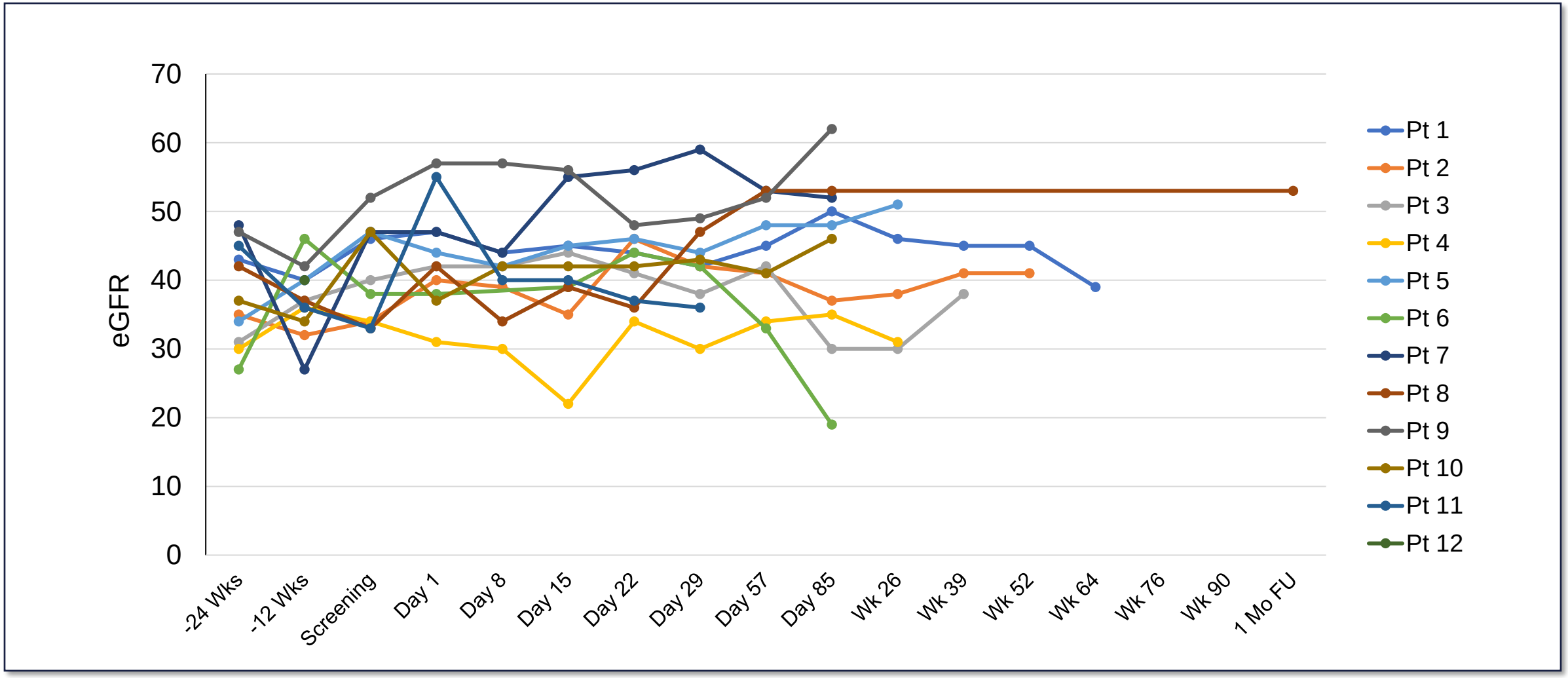
Day 85 doses:
Patient 1=1 mg
Patient 2=0.25 mg
Patient 3=0.5 mg

Reduced pharmacokinetic variability is predicted to decrease risk toxicities

*AUC: Area Under the Concentration-Time

Data is from TFF-T2-001 pre-database lock; Data cut off date: 3/8/24

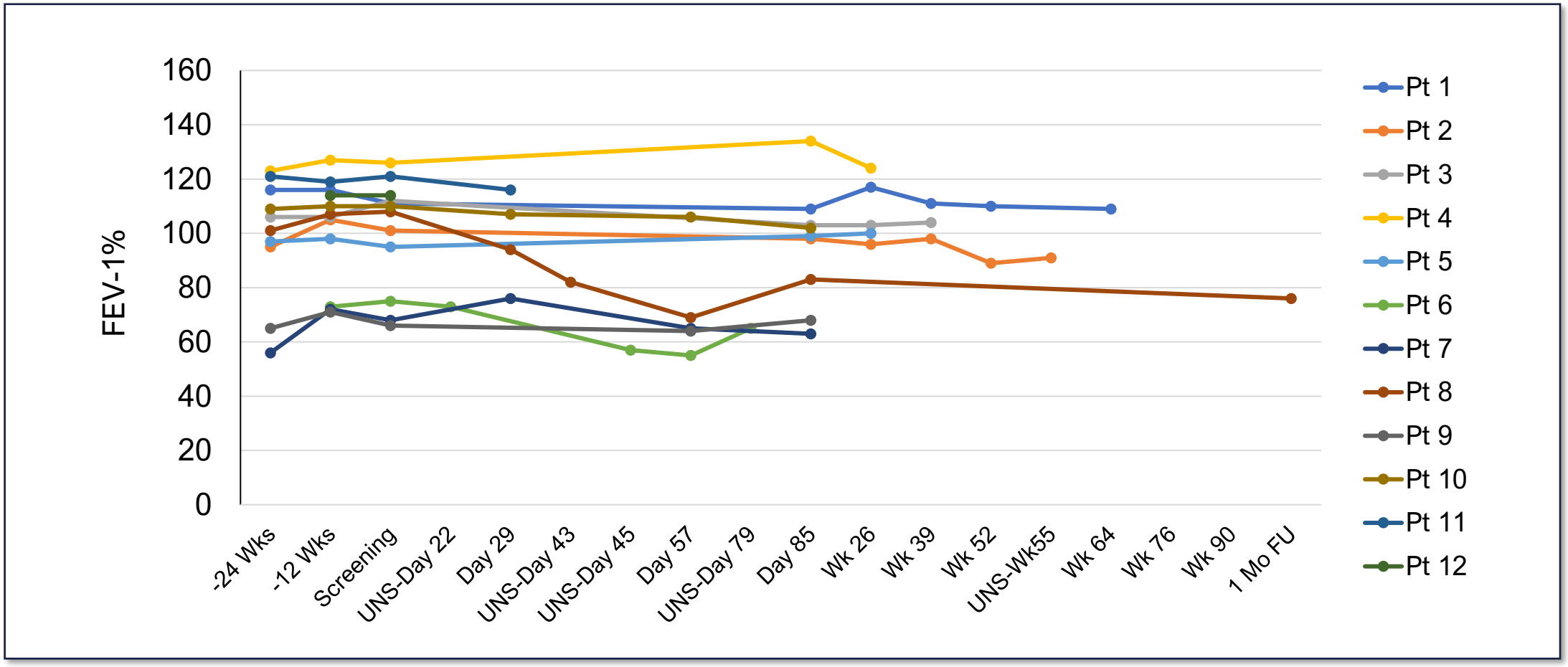
TFF TAC: Renal Function Maintained



Wks=weeks; 1 Mo FU=1 month follow up

Data is from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/5/24

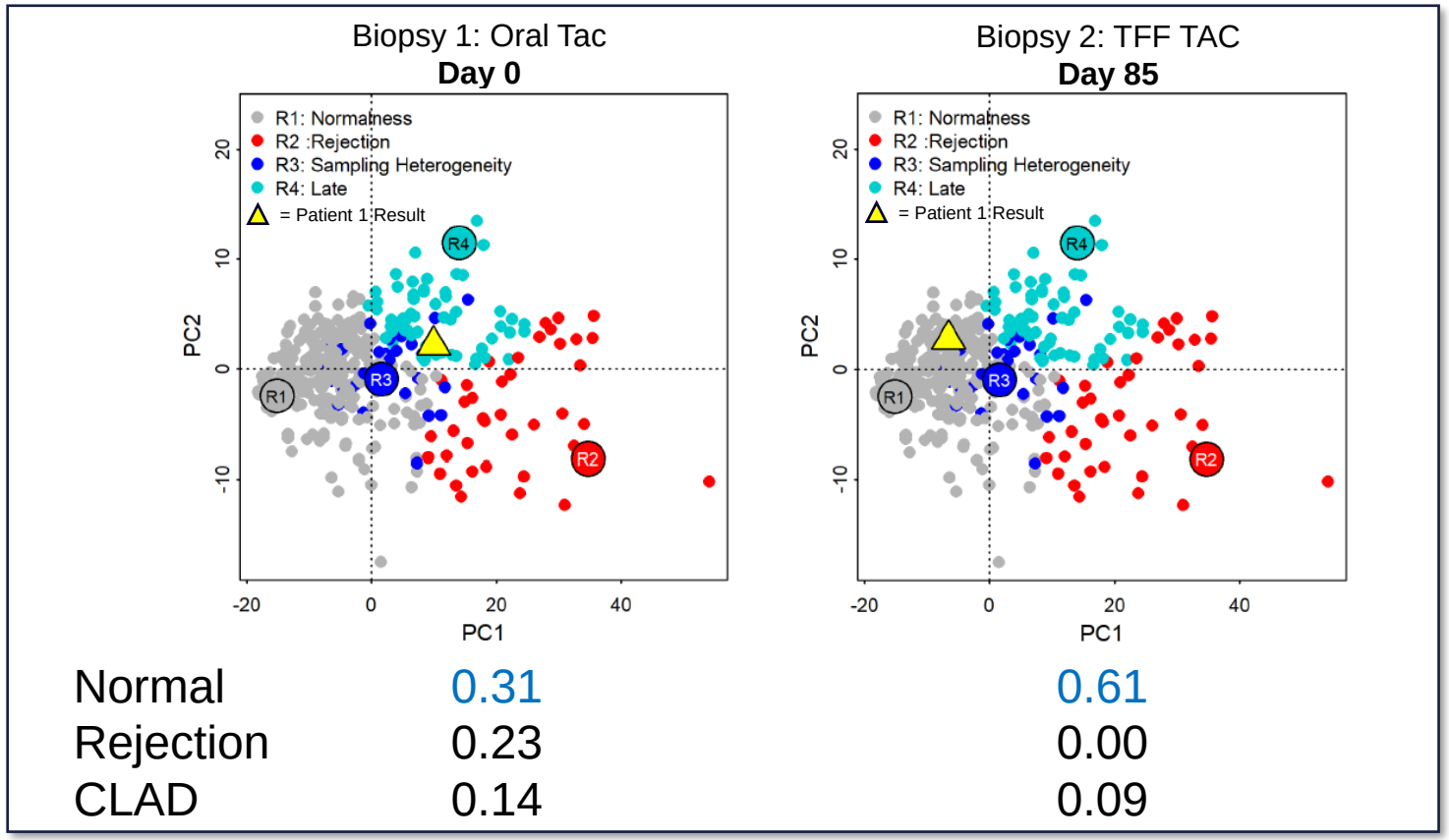
TFF TAC: Lung Function Remained Stable on TFF TAC



Wks=weeks; UNS=unscheduled; 1 Mo-FU=1 month follow up

Data is from TFF-T2-001 pre-database lock; Data cut off date of 7/23/24 includes 12 patients; two additional patients enrolled as of 9/5/24

Patient 1: MMDx Gene Expression Analysis Following Transition from Oral Tacrolimus to TFF TAC



Patient 1's gene expression shifted from a profile consistent with rejection and CLAD to a more normal profile upon transition to TFF TAC

MMDx: Molecular Microscope Diagnostic System

Data is from TFF-T2-001 pre-database lock; Data cut off date: 3/8/24 ; Halloran et al. American Journal of Transplant, 2020; Halloran et al. Journal of Heart and Lung Transplantation, 2019

TFF VORI Additional Information

Preclinical, Phase 1, and Compassionate Use Data

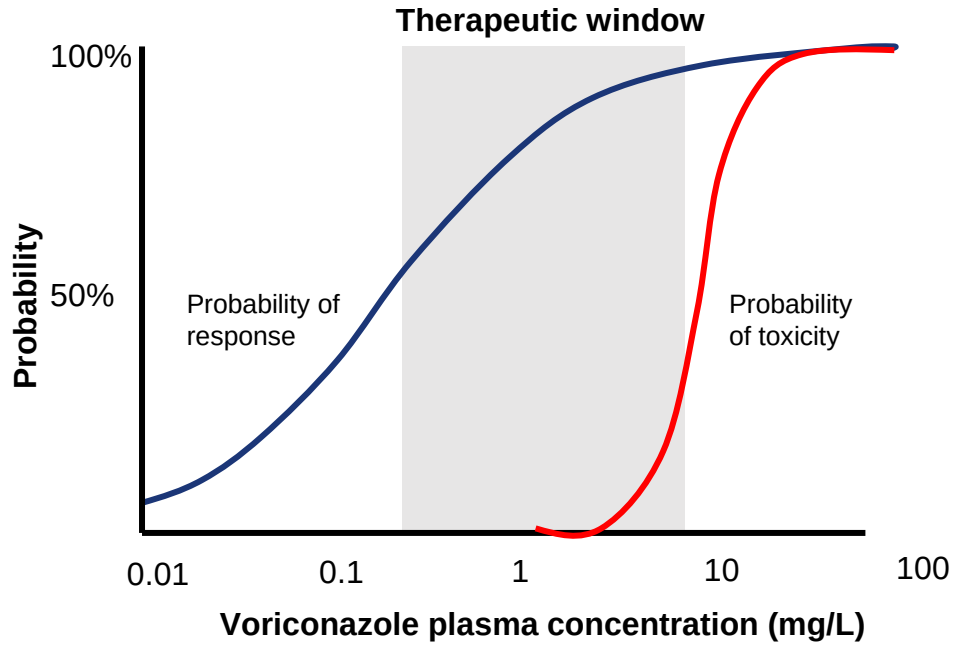
The Problem: Toxicity of IV & Oral Voriconazole

Poor side effect profile

Side Effects:

- Hepatic toxicity, arrhythmias and QT prolongation, infusion related reactions, visual disturbances, severe cutaneous adverse reactions, photosensitivity and renal toxicity[1]
- **Alternatives:**
  Oral and IV amphotericin B, echinocandins, and azoles, which are also limited by a narrow therapeutic window

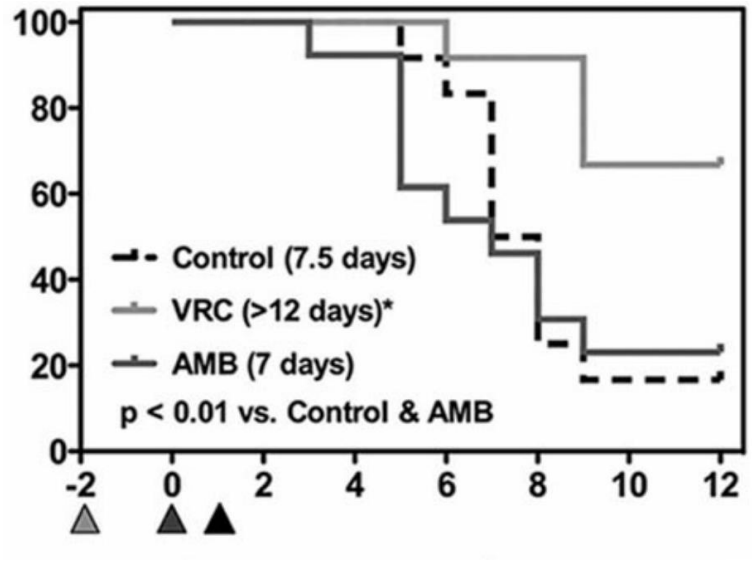
Current SOC voriconazole has narrow therapeutic window[2]



1. Voriconazole Package Insert; Warning and Precautions section, 5.2 and 5.3
2 Therapeutic window adapted from Pascual A et al. *Clinical Infectious Diseases* 2008.

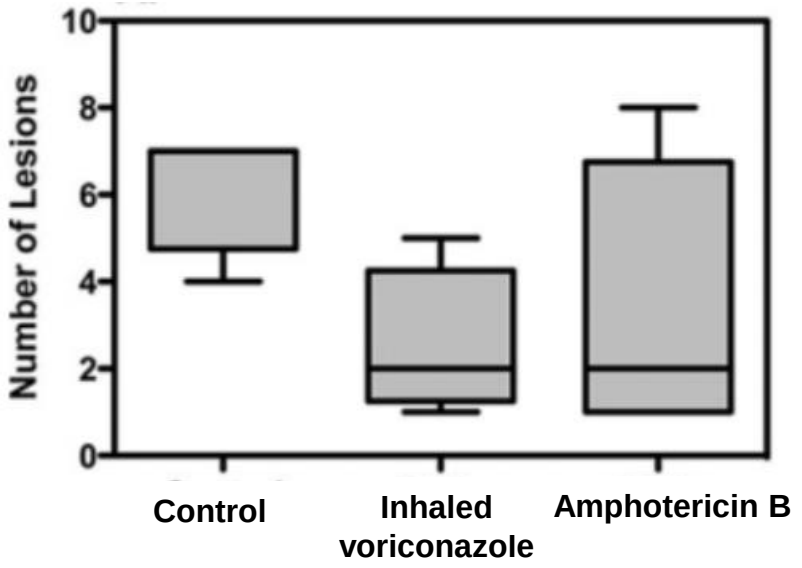
Preclinical Data of Inhaled Voriconazole

Increased survival



~3x higher survival rate with inhaled VORI vs. AMB

Decreased necrotic lesions in the lung



Tolman JA et al. *Antimicrobial Agents and Chemotherapy*. 2009.

Phase 1 Study Design

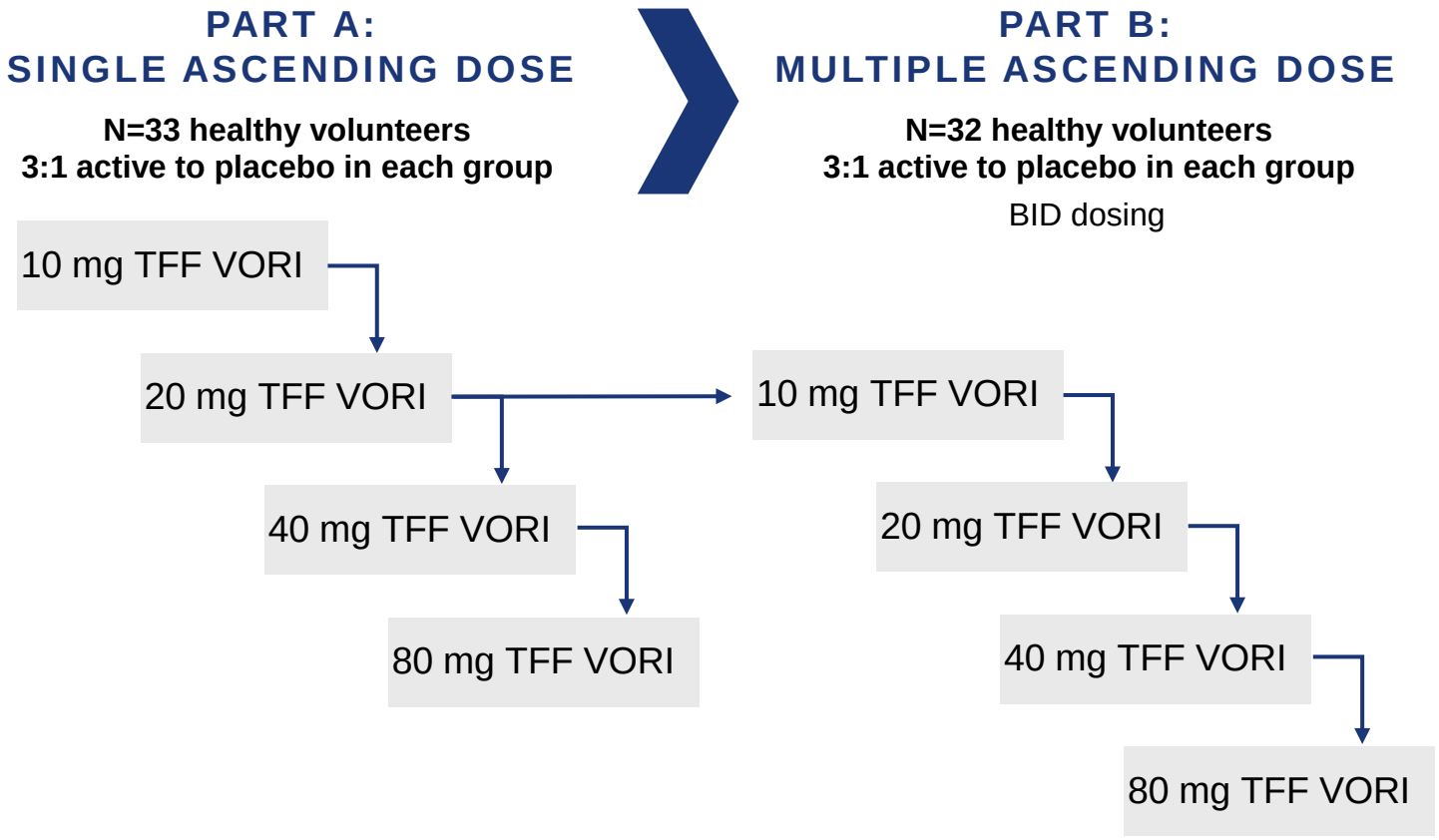
Study Overview

Design:

- Randomized, double-blind, placebo-controlled study of TFF VORI in 65 healthy adult volunteers
- Single ascending dose (SAD) and multiple ascending dose (MAD) phases

Endpoints:

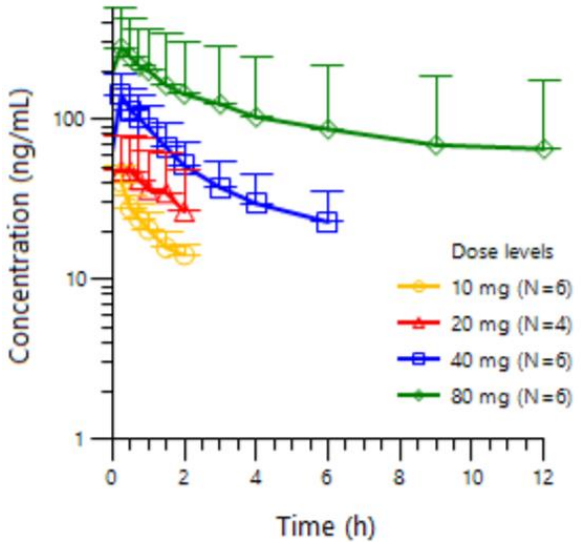
- Safety and tolerability
- Pulmonary function
- Pharmacokinetics



A Phase 1b study in 16 patients with asthma was also conducted to examine safety and tolerability of TFF VORI at doses up to 80 mg twice a day with similar results.

Phase 1 Study Results Show Safe & Well Tolerated

Multiple Ascending Dose Study Plasma Pharmacokinetics



- ✓ Therapeutic plasma voriconazole levels after oral voriconazole are 1-5.5 µg/ml compared to nanogram levels after inhaled treatment*

Safety

No clinically meaningful differences between TFF VORI and placebo in:

- ✓ % of patients with treatment emergent adverse events (TEAEs)
- ✓ Safety laboratory test results, vital signs, and pulse oximetry
- ✓ Pulmonary function tests, electrocardiograms, and eye examination

- Single and multiple doses of TFF VORI (10 mg, 20 mg, 40mg, and 80mg) were well tolerated
- No dose limiting toxicities
- Most TEAEs were Grade 1. There were no Grade 3 or higher TEAEs
- All TEAEs but one (headache) occurred in a single subject

TFF VORI showed 10-50-fold lower plasma exposure compared to oral with favorable safety and tolerability

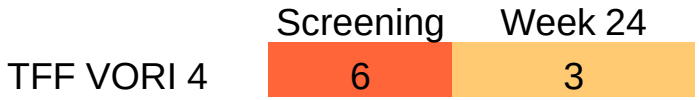
*Internal data and Yi et al. Ann Clin Microbiol Antimicrob. 2017. 16: 60

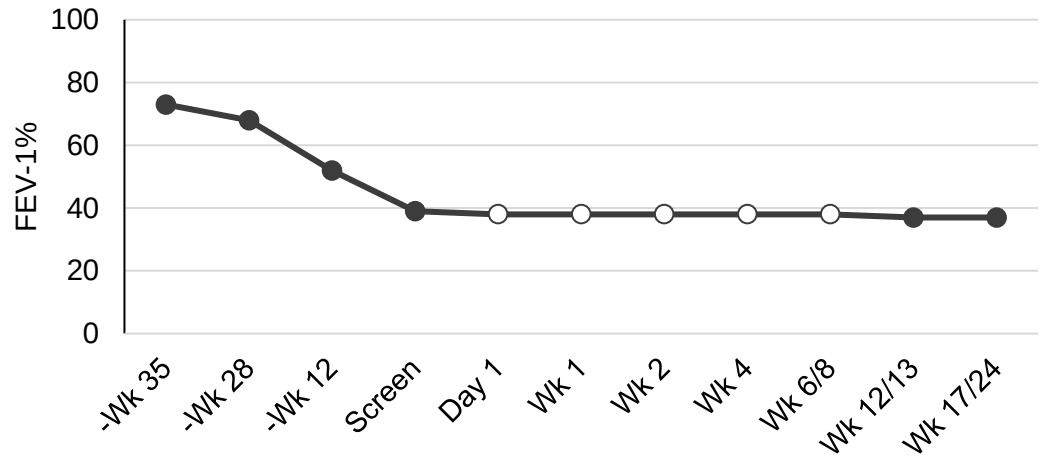
TFF VORI Patient 4 (EAP)

50-yr-old white male lung transplant recipient with CLAD presented with moderate cough, dyspnea (shortness of breath) and respiratory insufficiency and BAL* evidence of Scedosporium, which is voriconazole sensitive, and Lomentospora

Patient	Treatment Duration	Clinical Response		Mycologic Response	Radiologic Response	All-Cause Mortality
		Improved signs and symptoms	Stable or improved spirometry	No evidence of infection	Improved CT findings	
TFF VORI 4	24 weeks	✓	✓	✓	✓	No

Total Symptom Scores



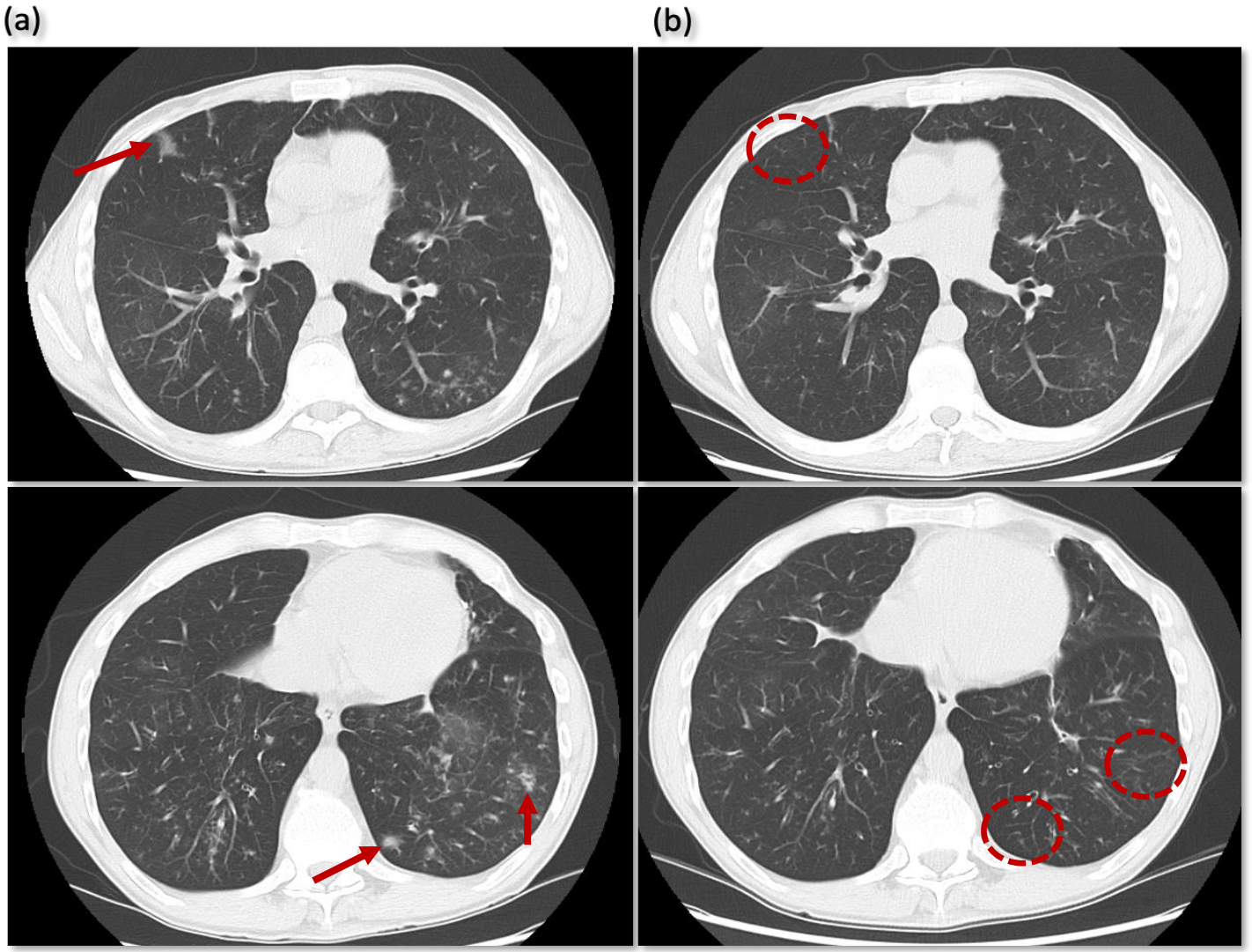


Follow up mycologic assessment:

- BAL* culture for Scedosporium negative

*BAL: bronchoalveolar lavage

TFF VORI Patient 4 (EAP)



Baseline **~Week 12**

Data is from pre-database lock; Data cut off date: 11/17/23