KemPharm

Management Presentation

May 2021

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KemPharm: Recent Highlights

AZSTARYS™ (KP415)

- FDA has approved AZSTARYS NDA
- Corium expected to launch in H2 2021
- Now eligible to receive up to $590 million for regulatory and sales milestone payments, per amended License Agreement
- New top-level sales tier for royalty rates on U.S. net sales + increased royalty rates throughout AZSTARYS patents (2037)

Improved Financial Position

- Multi-phase financial restructure process completed
- KMPH stock re-listed on Nasdaq effective Jan 8, 2021
- Debt repaid in full on Feb 8, 2021
- Recent AZSTARYS-related milestones further strengthen cash position
- Cash on hand as of Mar 31, 2021 = $76.0M

SDX Schedule IV Classification

- SDX classified as Schedule IV Controlled Substance by the DEA
- HHS and DEA determined that SDX has generally low potential for abuse and a lower potential for abuse when compared to d-MPH
- Key differentiator for AZSTARYS[1], KP484 and KP879

Beyond AZSTARYS

- KP879 IND cleared by FDA; initiation of clinical trial program expected by mid-2021
- Expanded services agreement with Corium adds additional revenue
- KVK-Tech/Sure Med collaboration for APADAZ, Perspectives in Care program gaining traction

[1] AZSTARYS is a Schedule II controlled substance which contains SDX, a Schedule IV prodrug of d-methylphenidate

KemPharm Leverages its LAT™ Prodrug Technology to Improve the Attributes of Approved Drugs in Large Markets

1) Select FDA-approved and widely prescribed drug for improvement, seek indications with few options or significant unmet need

2) Chemically modify using a ligand to create a prodrug
   - Ligands – GRAS or demonstrated to be safe
   - Prodrugs generate composition-based patents

3) Following ingestion, normal human metabolic processes cleave the ligand and release the active drug

- Generates long-lived **composition-of-matter** patent protection
- Proprietary to KemPharm and **applicable across many therapeutic areas**

Partnered Assets – Potential For Near and Long-Term Value

Candidate	Indication	Partner	Status
AZSTARYS™ Methylphenidate ER	ADHD	Gurnet Point Capital/Corium	• **Approved** • Potential launch H2 2021, royalties to follow
KP484 Methylphenidate ER	ADHD	Gurnet Point Capital/Corium	• **Licensed** • Ready to enter clinical phase • Timing TBD with partner
KP879 Methylphenidate	Stimulant Use Disorder (SUD)	Gurnet Point Capital/Corium	• IND cleared • Pre-clinical not needed, clinical to begin in 2021 • GPC has Right of First Negotiation after POC, then one-time ROFR up to NDA acceptance
KP922 Amphetamine	ADHD	Gurnet Point Capital/Corium	• Timing TBD • GPC has Right of First Negotiation after POC, but no ROFR
APADAZ® Hydrocodone IR	Pain	KVK Tech	• **Licensed** • Commercial launch Q4 2020 • During 2021, potential for $3.4M in m/s and reimb, plus profit share up to 50%

Current Development Pipeline

Indication	Product Candidate	Parent Drug	Next Milestone	Potential Timing of Next Milestone	Potential NDA Submission
ADHD	KP484	Methylphenidate (ER)	Initiation of Efficacy Trial	TBD by Partner	As early as 2023
First-in-Class Therapy					
Stimulant Use Disorder (SUD)	KP879	Methylphenidate (ER)	Initiation of Clinical Program	Mid 2021	2024
Rare CNS Diseases					
Idiopathic Hypersomnia (IH)	KP1077	Undisclosed	Pre-IND Meeting	1H 2021	TBD – Exploratory Program

AZSTARYS™

D-Methylphenidate Prodrug Product for the Treatment of ADHD

ADHD and ER Methylphenidate Market – 2019

- ~$17.5 billion ADHD market with prescription growth of >4% year-over-year
- The branded portion of the ADHD market was ~$7.4B in 2019 and more than 95% of these branded prescriptions are for extended release
- Methylphenidate (MPH) accounted for approximately 20 million TRx's and $4.9 billion in sales in 2019
- Market research indicates prescribers see the following potential KP415 features as key advantages
  - Duration of action (60%)
  - Lower abuse potential (52%)
  - Early onset of action (43%)
- Market research also indicates that prescribers estimate that MPH is given as the preferred first line of therapy for children under the age of 13 approximately 60% of the time

Market Data Source: Symphony Health, PHAST 2019

ASTARYS™ Approval

- ✓ **On March 2, 2021, the FDA approved AZSTARYS (serdexmethylphenidate and dexmethylphenidate capsules, for oral use, CII) A New Once-Daily Treatment for ADHD**
  - Consists of serdexmethylphenidate (SDX), KemPharm's prodrug of d-methylphenidate (d-MPH), co-formulated with immediate-release d-MPH
  - Corium expects to make AZSTARYS commercially available in the U.S. as early as the second half of 2021
- ✓ **AZSTARYS NDA Approval is a Significant Milestone for KemPharm**
  - Demonstrates value potential of SDX and KemPharm's groundbreaking LAT® platform
  - License Agreement with an affiliate of GPC provides significant economic benefits to KemPharm tied to the commercial launch of AZSTARYS
- ✓ **Approved label for AZSTARYS provides significant differentiation, which required a re-thinking of commercial forecasts and long-term possibilities**
  - The totality of various label elements, including administration, height and weight data from clinical trials experience, pharmacokinetics and efficacy data, all provide potential differentiation as compared to currently available d-MPH products for ADHD

Amendment to License Agreement w/ Affiliate of GPC

- ✓ **Post-Approval commercial assessments conducted separately and together with the GPC team led to a renegotiation of the economic terms of the KP415 License Agreement**
  - Total potential regulatory and sales milestone payments increased to **$590M** from $468M (these are in addition to $15M in upfront and NDA acceptance milestones already paid)
  - Added **new top-level sales tier for royalty rates** on U.S. net sales and **increased royalty rates throughout the life** of the patents that cover AZSTARYS through 2037. Those rates range, on a product-by-product basis, from a percentage in the high single digits up to the mid-twenties for U.S. net sales
  - KemPharm eligible to receive **$10M** regulatory milestone payment for FDA approval of AZSTARYS; additional **$10M** regulatory milestone following DEA scheduling determination of SDX (anticipated on or around June 2, 2021)
  - **Four additional sales milestone tiers added**, including three lower-level sales tiers and a new top-level sales tier
  - Sales milestones available under the amended License Agreement total **$550M**, as compared to $420M in the original agreement

AZSTARYS™ Label

Sections 1 and 2.3

Section 1: Indications and Usage

- AZSTARYS is indicated for the treatment of Attention Deficit Hyperactivity Disorder (ADHD) in patients 6 years of age and older.

Section 2.3: Administration Information

- Administer AZSTARYS orally once daily in the morning with or without food.
- AZSTARYS capsules may be taken whole, or opened and the entire contents sprinkled into 50 mL of water or over 2 tablespoons of applesauce.

IMPORTANT SAFETY INFORMATION, Contraindications, Warnings and Precautions, Adverse Reactions and Drug Interactions may be found within the full Prescribing Information at www.kempharm.com/pipeline-products/#kp415

AZSTARYS™ Label

Section 6

Section 6.1: Clinical Trials Experience

To adjust for normal growth, z-scores were derived (measured in standard deviations [SD]); z- scores normalize for the natural growth of children and adolescents by comparisons to age- and sex-matched population standards. A z-score change less than 0.5 SD is considered not clinically significant.

In this study, the mean increase in weight from baseline to Month 12 was 3.4 kg among study completers. The mean change in z-score from baseline to Month 12 was -0.20, indicating a lower than expected increase in body weight compared to children of the same age and sex, on average. Most of the weight z-score decline occurred in the first 4 months of treatment.

The mean increase in height from baseline to Month 12 was 4.9 cm among completers. Using the same z-score analysis for height, the mean change in z-score from baseline to Month 12 was -0.21, indicating a lower than expected increase in height compared to pediatric patients of the same age and sex, on average.

AZSTARYS™ Label

Section 12

Section 12.3: Pharmacokinetics

- No clinically meaningful differences in the exposure of dexmethylphenidate were observed when administered after an overnight fast, with a high-fat, high-caloric meal, or sprinkled onto applesauce or water. The median time to peak plasma concentration (T_{max}) was lengthened from 2 to 4-4.5 hours in the presence of food.

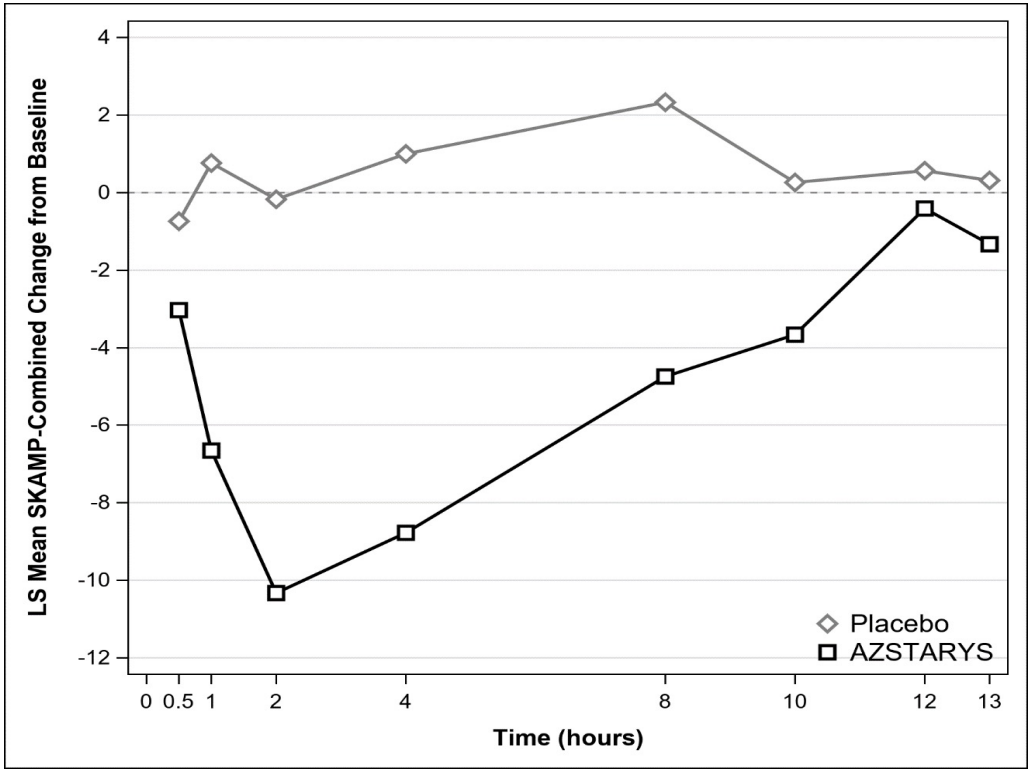
- Serdexmethylphenidate is a prodrug of dexmethylphenidate and is likely converted to dexmethylphenidate mainly in the lower gastrointestinal tract.

IMPORTANT SAFETY INFORMATION, Contraindications, Warnings and Precautions, Adverse Reactions and Drug Interactions may be found within the full Prescribing Information at www.kempharm.com/pipeline-products/#kp415

AZSTARYS™ Label

Section 14

Figure 2: LS Mean Change in SKAMP-Combined Score from Baseline after Treatment with AZSTARYS or Placebo during Classroom Day in Pediatric Patients (6 to 12 years) with ADHD



IMPORTANT SAFETY INFORMATION, Contraindications, Warnings and Precautions, Adverse Reactions and Drug Interactions may be found within the full Prescribing Information at www.kempharm.com/pipeline-products/#kp415

AZSTARYS™ Commercialization - Reasons for Optimism

- Corium preparing for commercial launch as early as the second half of 2021
  - Target date aligns with start of school in Aug./Sept.
  - Manufacturing validation underway
  - Corium is led by Perry Sternberg, President and CEO, as well as many other executives with prior experience at Shire
- Based on the approval label for AZSTARYS, peak market share may be greater than original forecasts
- Some payors have indicated initial receptivity to AZSTARYS and the differentiation that it may provide for patients
- Recent SDX Schedule IV classification by DEA potentially increases appeal of AZSTARYS[1] among prescribers and patients
- Amended License Agreement allows GPC to re-allocate resources to Corium's efforts, with the goal to optimize the commercial launch
  - *Additional investment in commercialization activities could potentially accelerate the ramp to peak, as compared to original forecasts*

[1] AZSTARYS is a Schedule II controlled substance which contains SDX, a Schedule IV prodrug of d-methylphenidate

Serdexmethylphenidate (SDX) – Schedule IV Classification

- SDX recently classified as a Schedule IV Controlled Substance by DEA
  - AZSTARYS classified as a Schedule II controlled substance as it includes a 70:30 mixture of SDX (Schedule IV) and d-MPH (Schedule II), respectively
- SDX Schedule IV classification based on eight-factor analysis by HHS, which concluded that, “SDX is related in action and effect to the schedule IV substance phentermine, and can therefore be expected to have a similar potential for abuse.”
- HHS also affirmed that, “in clinical studies, SDX demonstrated a lower potential for abuse when compared to d-MPH.”
- SDX is the sole API in KP879
  - For KP879, if approved, Schedule IV classification could allow physicians to prescribe KP879 knowing that it may have a significantly lower potential for abuse when treating Stimulant Use Disorder (SUD)

Key Differences between Schedule C-II and C-IV Methylphenidate Products

	All Current Methylphenidate Products	Serdexmethylphenidate (SDX)
Current DEA Schedule	C-II	C-IV
Refills Allowed?	No	Yes
Duration of Script/Refills?	None	Up to 6 months total
Delivery of Prescription	Written or electronic only	Phone, fax, written or electronic
Similar abuse potential as phentermine	No	Yes

- Specific advantages of a C-IV SDX include:
  - KP879 could be C-IV as well, if approved
  - Other SDX containing products may be C-IV
  - Since amphetamine-based prodrugs (KP922) have similar properties as SDX, the possibility for lower schedule exists with those candidates

KP484

D-Methylphenidate Prodrug Product Candidate for the Treatment of ADHD

The Adult ADHD Market

- Over 4% of U.S. adults, or approximately 10.5 million adults have ADHD and are now the largest part of the ADHD market, comprising 64% of total TRx[1,2, 3]
- In 2019, the adult[3] ADHD market has grown at 5% vs. 1% for the pediatric ADHD market compared to the previous year[1]
- Vyvanse®, the ADHD product known for its duration and abuse deterrent features has seen significant growth in the adult[3] market averaging 15% year-over-year growth since 2010[1]
- Shire's Mydayis® was recently approved as a super long-acting product in the amphetamine category (2 to16 hour duration)
- Other potential market opportunities exist within indications where efficacy has been demonstrated by other stimulants or which remain as currently unmet medical needs

1. Symphony Health, PHAST 2009-2019
2. Ronald C. Kessler et al. (April 2006). The Prevalence and Correlates of Adult ADHD in the United States: Results From the National Comorbidity Survey Replication, American Journal of Psychiatry 163(5):71
3. Patients aged 17+; Unknown ages were excluded

AZSTARYS™ and KP484 Product Comparison

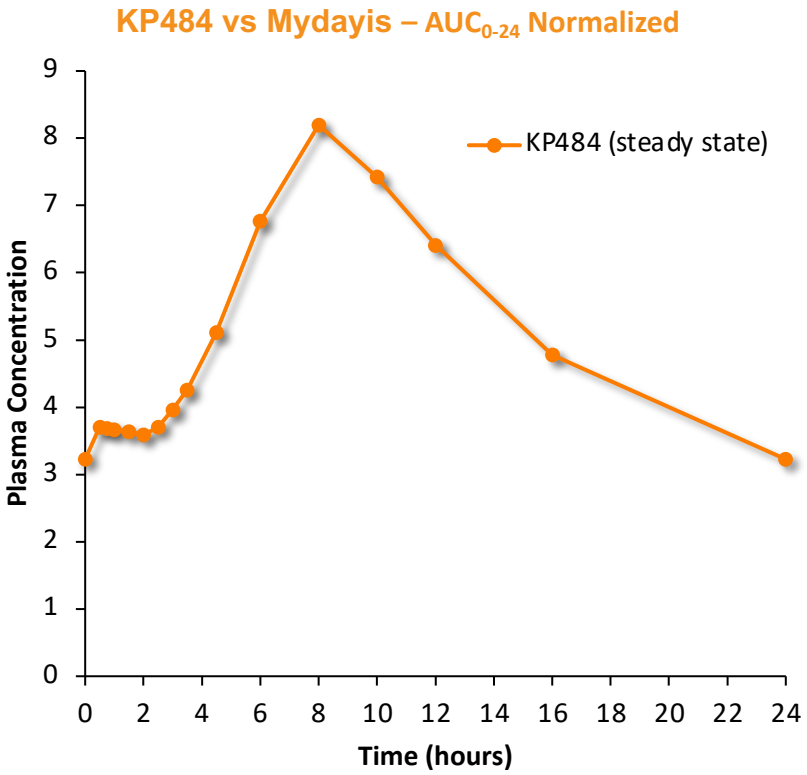
AZSTARYS

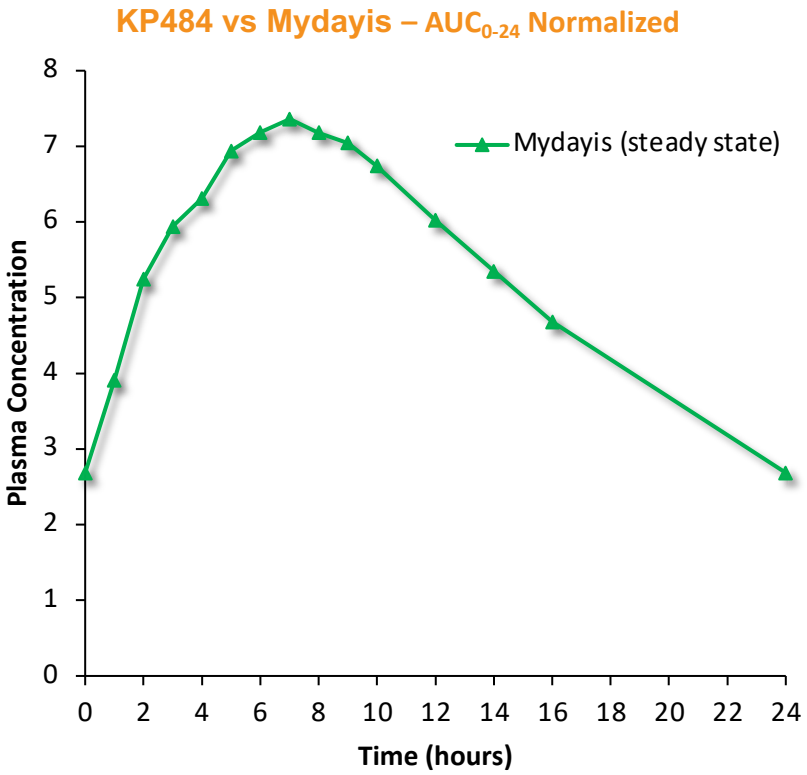
- Prodrug of d-MPH (SDX) with extended-release properties, co-formulated with IR d-MPH
- Potential features and benefits:
  - Once-daily dosing
  - Earlier onset, long duration
  - Patient-friendly dosage form
- Approved for age six and older
- No generic equivalent product
- Composition-based patents expire in 2037; potentially NCE eligible

KP484

- Prodrug of d-MPH (SDX) with extended-release properties
- Potential features and benefits
  - Once-daily dosing
  - Longer duration than other extended release ADHD products
  - Lower abuse potential
- No generic equivalent product
- Composition-based patent expires in 2037; potentially NCE eligible

KP484 Steady State PK vs. Mydayis[1]





Disclaimer: Mydayis steady-state plasma concentrations were modeled based on Mydayis single-dose data[1] and were normalized so that the mean AUC_{0-24}/C_{max} for d-amphetamine released from Mydayis matches the mean AUC_{0-24}/C_{max} for d-methylphenidate released from KP484. The representation is not intended for predictions or direct comparison of efficacy between the two drugs. Methylphenidate and amphetamine are different stimulants with different potency and MOA.

(1) Spencer TJ, Adler LA, Weisler RH, Youcha SH. Triple-Bead Mixed Amphetamine Salts (SPD465), a Novel, Enhanced Extended-Release Amphetamine Formulation for the Treatment of Adults with ADHD: A Randomized, Double-Blind, Multicenter, Placebo-Controlled Study. *J Clin Psychiatry*. **2008**;69*(9)*:1437-48.

KP879

Agonist Replacement Therapy for the Treatment of Stimulant Use Disorder (SUD)

Stimulant Use Disorder (SUD)

- Stimulant Use Disorder (SUD) is broadly defined as the abuse or misuse of cocaine, methamphetamine, or other stimulants
- Although there are therapies for opioid addiction (buprenorphine, methadone), there are currently no approved treatments for SUD
- Studies with agonist replacement therapies have shown promising data for treating SUD

U.S. Prevalence of Stimulant Abuse in 2016

Stimulant	Abuse Reported In Last 30 Days (% of US Population >12 years)
Prescription Stimulants	1,700,000 (0.63%)
Cocaine[a]	1,900,000 (0.71%)
Methamphetamine[b]	~700,000 (0.25%)
Total:	**4,300,000 (1.59%)**

[a] includes crack cocaine
[b] includes only illicitly manufactured methamphetamine

Source: Substance Abuse and Mental Health Services Administration. (2017). HHS Publication No. SMA 17-5044, NSDUH Series H-52.

KP879 for the Treatment of SUD

- Potential KP879 features and benefits:
  - Stand-alone formulation of serdexmethylphenidate (SDX)
  - Releases d-methylphenidate (d-MPH), a dopamine reuptake inhibitor (similar pharmacology as abused stimulants)
  - Very gradual onset of blood concentrations of released d-MPH followed by sustained release
  - Low oral, IN, and IV abuse potential
- Focus of initial clinical studies
  - High dose PK
  - High dose safety
  - Effect size in different treatment populations
- May qualify for FDA fast track, breakthrough therapy and/or priority review
- May qualify for orphan designation depending on exact indication and target population

KP1077

For the Treatment of Idiopathic Hypersomnia (IH)

Idiopathic Hypersomnia (IH)

- There are no approved therapies for IH
- Narcolepsy treatments have commonly been used for treating IH symptoms
  - GHB/sodium oxybate for improved sleep
  - Stimulants for Excessive Daytime Sleepiness (EDS)
    - Methylphenidate remains the most commonly used stimulant for IH
    - Amphetamine
    - Modafinil
- Unmet needs are focused on symptom control
  - No 16-hour product available for EDS symptom control
  - PRN (as needed) utilization of IR methylphenidate is very typical for "break-through" sleepiness

KP1077 Product Candidate Overview

- Once-daily dosing
- Potential features and benefits
  - Single dose allows for symptom control up to 16 hours
  - Still allows for PRN stimulant use for “break-through” sleepiness
- Orphan drug designation potential
  - Fast-track eligible
  - Break-through designation eligible
  - Pediatric rare disease potential
- No generic equivalent
- Composition-of-matter based patents expire in 2037; additional applications may extend past that time

APADAZ®

FDA Approved for the Short-Term Treatment of Acute Pain

APADAZ® Overview

- First FDA-approved prodrug of hydrocodone (benzhydrocodone) combined with acetaminophen with differentiated label and long-lived patents
- Licensed to KVK-Tech, Inc.
  - KemPharm eligible to receive up to $3.4M in initial payments and reimbursements, plus sales milestone payments of up to $53M
  - Net profit share of up to 50% between KemPharm and KVK
- The commercial payor category accounted for 1.3B HC/APAP tablets, or 37% of a total of 3.5 billion HC/APAP tablets utilized in the U.S. in 2019[1]
- Current environment for opioids is difficult due to ongoing litigation related to past opioid marketing; progress continues
- Sure Med and KVK collaborating on a patient/provider support program - Perspectives in Care® - to provide education to physicians, pharmacies, and patients regarding responsible opioid therapy
- Commercial launch began Dec 1, 2020

1. Symphony Health PHAST: 2019

Financial Update

Multi-Phase Financial Restructuring Completed

- Series of transactions enabled the restructure of the balance sheet and strengthened our financial position

- Transactions culminated in aggregate gross proceeds of approximately $94 million, enabling KemPharm to:
  - Regain its listing on The Nasdaq Capital Market as of Jan 8, 2021
  - Eliminate all of the Company's debt as of Feb 8, 2021
  - Add a substantial amount of new capital to propel the Company's growth efforts
- Incremental capital in-flows continue as associated warrants are exercised
  - 5-year life
  - Strike prices range from $6.36 – $8.125 per share

- KemPharm is now positioned with a solid balance sheet and a significantly extended cash runway that provides greater operating and strategic flexibility

Q1 2021 Financial Results

- Revenue of $12.1M, primarily comprised of a milestone payment of $10.0M related to the AZSTARYS NDA approval and services revenue of $2.1M under the Corium consulting arrangement
- Net loss of ($10.3M), or ($0.54) per basic and diluted share, compared to net loss of ($5.8M), or ($1.92) per basic share and diluted share for Q1 2020, primarily driven by non-cash loss on extinguishment of debt of ($16.9M) from the financial restructuring completed during Q1 2021
- Operating income of $7.0M, or $0.36 per basic and diluted share, primarily driven by an increase in revenue of $10.0M and a net decrease in operating expenses of $0.7M as compared to Q1 2020
- R&D expenses were $2.3M, a 7% increase compared to Q1 2020
- G&A expenses were $1.9M, a 16% decrease compared to Q1 2020

Q1 2021 Balance Sheet Update

- As of Mar 31, 2021, total cash[1] was $76.0M, an increase of $71.7M compared to Dec 31, 2020
- Total debt, net, of $67.7M at Dec 31, 2020, **has been fully extinguished**:
  - Paid $30.3M out of cash proceeds received in Jan 2021 offering
  - Converted $31.5M of principal and interest into preferred stock in Jan 2021
  - Paid $8.0M of principal, interest and prepayment fee paid in Feb 2021
- As of Mar 31, 2021:
  - 28,480,156 common shares outstanding
  - 38,379,718 fully diluted shares outstanding, which includes 9,544,693 of shares issuable upon exercise of warrants
  - No preferred stock outstanding

1 - Includes cash, cash equivalents and restricted cash.

Improved Financial Position

- Series of transactions enabled the restructure of the balance sheet and strengthened our financial position
- Transactions culminated in aggregate gross proceeds of approximately $94 million, enabling KemPharm to:
  - Regain its listing on The Nasdaq Capital Market as of Jan 8, 2021
  - Eliminate all of the Company's debt as of Feb 8, 2021
  - Add a substantial amount of new capital to propel the Company's growth efforts
- KemPharm is now positioned with a solid balance sheet and a significantly extended cash runway that provides greater operating and strategic flexibility

KemPharm: Looking Ahead

AZSTARYS™ (KP415) - KemPharm continues to actively support Corium's commercial launch effort which is expected in H2 2021 - Additional clinical work around preschool age group (4-5 yr.) expected in 2021 - Expect royalties and sales milestones in 2022 and beyond	**Improved Financial Position** - Cash on hand as of Mar 31, 2021 = $76.0M - Recent AZSTARYS-related milestones further strengthen cash position
KP879 - SDX classified as Schedule IV Controlled Substance by the DEA - KP879 IND cleared by FDA; initiation of clinical trial program expected by mid-2021 - Additional timing and details to come	**Beyond AZSTARYS** - Expanded services agreement with Corium adds additional revenue - KVK-Tech/Sure Med collaboration for APADAZ, Perspectives in Care program gaining traction - Continued evaluation of pipeline and other value-creating opportunities

KemPharm

Leveraging our LAT™ Prodrug Technology to Create Long-Term Value

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