QINLOCK™ (ripretinib) FDA approval

May 15, 2020

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Introduction

Jen Robinson
Investor Relations

Deciphera Call Participants

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Opening Remarks	Steve Hoerter President and Chief Executive Officer
QINLOCK™ (ripretinib) Label and Data	Matthew L. Sherman, MD Executive Vice President and Chief Medical Officer
Commercial Strategy	Dan Martin Chief Commercial Officer
Closing Remarks	Dan Flynn Executive Vice President, Chief Scientific Officer and Founder Steve Hoerter President and Chief Executive Officer

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This presentation may contain forward-looking statements that are based on our current expectations, estimates and projections about our industry as well as management's beliefs and assumptions. Words such as "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates," "may," "will," and variations of these words or similar expressions are intended to identify forward-looking statements. These statements include statements regarding our business strategy, commercial expectations for QINLOCK, including U.S. launch of QINLOCK and launch strategy, patient population estimates, prospective products, clinical trial results, product approvals and regulatory pathways, breakthrough therapy designation (BTD), Real-Time Oncology Review (RTOR) and Project Orbis programs, timing and likelihood of success, plans and objectives of management for future operations, expectation regarding future clinical candidates, future expectations for anticipated products, the market opportunity for our drug and drug candidates and business guidance, including discovery, clinical, regulatory and commercial milestones, as well as cash guidance, and speak only at the time this presentation was prepared. Such statements are based upon the information available to us now and are subject to change. We will not necessarily inform you of such changes. These statements are not guarantees of future performance and are subject to certain risks, uncertainties and assumptions that are difficult to predict. Therefore, actual results could differ materially and adversely from those expressed in any forward-looking statements as a result of various factors. Factors which could cause actual results to differ materially from those in the forward-looking statements include, among others, our ability to successfully commercialize QINLOCK, the impact of COVID-19 on our business and operations, our history of significant losses since inception, our ability to obtain necessary capital when needed on acceptable terms, the timing and results from ongoing or future clinical and non-clinical studies and trials, the possibility preliminary, top-line or initial data may not be indicative of the results of final data, unexpected adverse events, our ability to obtain regulatory approval or clearance of our drug candidates, our ability to manage third party drug substance and drug product contract manufacturers, actions of regulatory agencies, our ability to obtain and maintain reimbursement for any approved products and the extent to which patient assistance programs are utilized, any or all of which may affect the initiation, timing and progress of clinical studies and the timing of and our ability to obtain additional regulatory approvals, if at all, our ability to make QINLOCK and our investigational drugs available to patients, the inherent uncertainty in estimates of patient populations and incidence and prevalence estimates, our ability to comply with healthcare regulations and laws, competition from other products or procedures, our reliance on third-parties to conduct our clinical and non-clinical trials, our reliance on single-source third-party suppliers to manufacture clinical, non-clinical and commercial supplies of our drug substance and drug product and our ability to obtain, maintain and enforce our intellectual property rights for QINLOCK and our drug candidates. New risk factors and uncertainties may emerge from time to time, and it is not possible to predict all risk factors and uncertainties. There can be no assurance that the opportunity will meet your investment objectives, that you will receive a return of all or part of such investment. Investment results may vary significantly over any given time period. The appropriateness of a particular investment or strategy will depend on an investor's individual circumstances and objectives. Deciphera recommends that investors independently evaluate specific investments and strategies. For further information regarding these risks, uncertainties and other factors, you should read the “Risk Factors” section of Deciphera’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2020 filed with the Securities and Exchange Commission (the "SEC"), and Deciphera’s other SEC filings.

Opening Remarks

Steve Hoerter
President and Chief Executive Officer

Full Approval Granted by the U.S. FDA

NOW APPROVED

QINLOCK is a kinase inhibitor indicated for the treatment of adult patients with advanced gastrointestinal stromal tumor (GIST) who have received prior treatment with 3 or more kinase inhibitors, including imatinib.

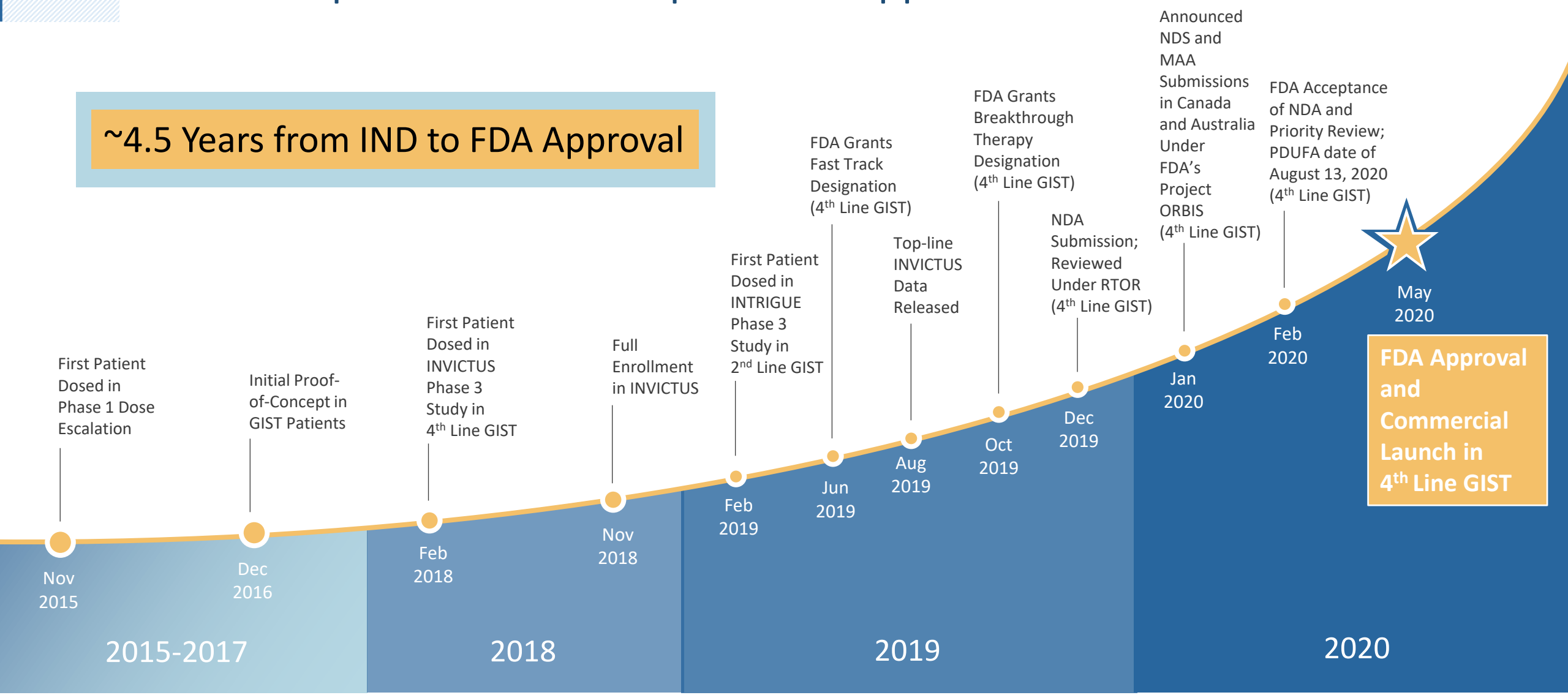
Notes: Full prescribing information is available at www.QINLOCK.com.

QINLOCK™ (ripretinib) Label and Data

Matthew L. Sherman, MD
Executive Vice President and Chief Medical Officer

QINLOCK™: Rapid Clinical Development to Approval

~4.5 Years from IND to FDA Approval



Notes: MAA=Marketing Authorisation Application; NDS=New Drug Submission.

QINLOCK™: U.S. Prescribing Information Overview

INDICATION

QINLOCK is a kinase inhibitor indicated for the treatment of adult patients with advanced gastrointestinal stromal tumor (GIST) who have received prior treatment with 3 or more kinase inhibitors, including imatinib.

RECOMMENDED DOSE

150 mg orally once daily with or without food.

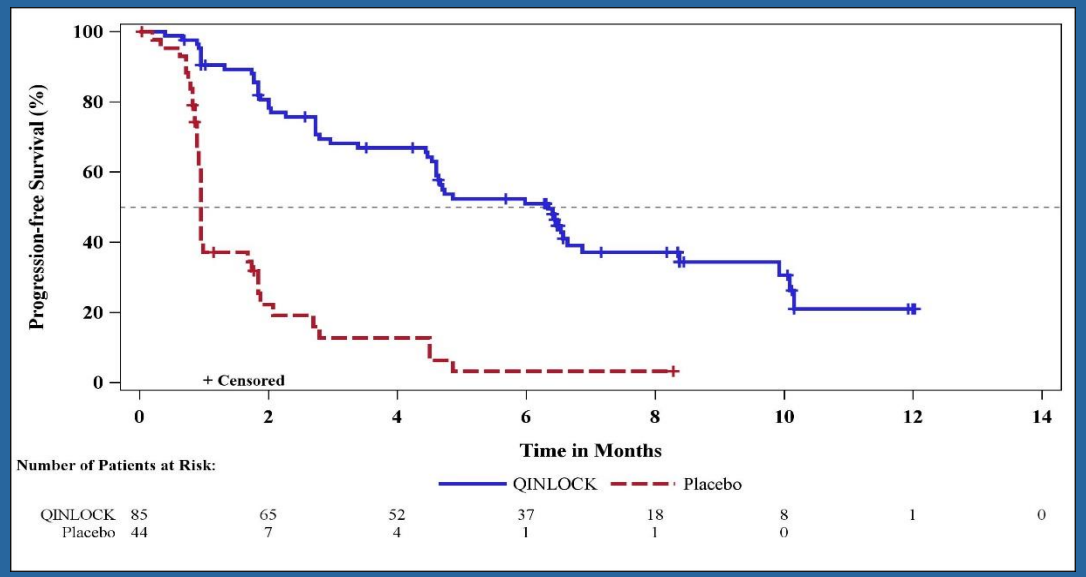
QINLOCK is the first approved TKI designed specifically for GIST regardless of patients' mutational status

Notes: Full prescribing information is available at www.QINLOCK.com.

QINLOCK™: A Potential Best-In-Class Treatment for Advanced GIST

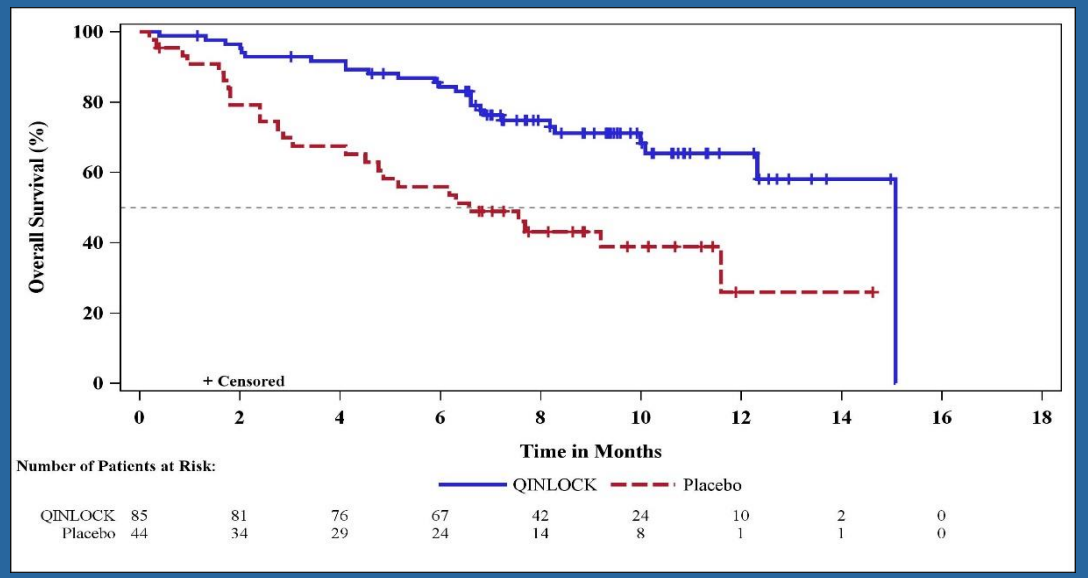
QINLOCK significantly improved **progression free survival** vs. placebo, reducing the risk of progression or death by **85%**

(median PFS of 6.3 months vs. 1.0 month; HR=0.15, 95% CI (0.09-0.25), *P*<0.0001)



QINLOCK showed a clinically meaningful benefit in **overall survival** vs. placebo, reducing the risk of death by **64%**

(median OS of 15.1 months vs. 6.6 months; HR=0.36, 95% CI (0.21-0.62))



Key secondary endpoint of objective response rate was 9.4% compared with 0% for placebo (*P*=0.0504)

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Notes: Full prescribing information is available at www.QINLOCK.com; Overall survival data includes all time periods, including dose escalations. Placebo arm includes patients taking placebo who, following progression, were crossed-over to QINLOCK treatment.

QINLOCK™: Safety Highlights from the Prescribing Information

Most Common Adverse Reactions (≥20%; Any Grade)

- Alopecia, fatigue, nausea, abdominal pain, constipation, myalgia, diarrhea, decreased appetite, palmar-plantar erythrodysesthesia syndrome, and vomiting

Warnings and Precautions

- Palmar-plantar erythrodysesthesia syndrome
- New primary cutaneous malignancies
- Hypertension
- Cardiac dysfunction
- Risk of impaired wound healing
- Embryo-fetal toxicity

Dose Modifications from INVICTUS Phase 3 Study[1]		
Any adverse reaction leading to…	**RIPRETINIB (n=85)**	**PLACEBO (n=43)[2]**
Treatment discontinuation	7 (8%)	5 (12%)
Dose interruption	20 (24%)	9 (21%)
Dose reduction	6 (7%)	1 (2%)

Notes: (1) Data presented at ESMO Congress 2019; (2) 44 patients were randomized to placebo, but 1 patient did not receive treatment; Full prescribing information is available at www.QINLOCK.com; adverse reactions=treatment-emergent adverse events regardless of causality.

intrigue 〉 Ongoing Global Pivotal Phase 3 Study in 2nd Line GIST

Initiated December 2018

118 Active Sites(1)

22 Countries

Prior Imatinib Therapy

Ripretinib
150 mg QD

1:1 Randomization
Open-label
n=426

Sunitinib
50 mg QD

PRIMARY ENDPOINT
= Progression Free Survival
No Cross-over Option

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Notes: (1) Number of open sites current as of May 1, 2020.

Commercial Strategy

Dan Martin
Chief Commercial Officer

Significant Unmet Medical Need Post-Imatinib

Estimated Incidence of GIST: **U.S. 4,000-6,000**[1]

2nd Line Treatment:
Sunitinib

- mPFS=5.6 months; HR=0.33[2]
- mOS=17.0 months; HR=0.83[3]

3rd Line Treatment:
Regorafenib

- mPFS=4.8 months; HR=0.27[4]
- mOS=17.4 months; HR=0.91[4]

4th Line Treatment:
QINLOCK™

- mPFS: 6.3 months; HR=0.15[5]
- mOS=15.1 months; HR=0.36[5]

2L	3L	4L
~2,000 U.S. incident patients eligible for treatment[6]	~1,400-1,600 U.S. incident patients eligible for treatment[6]	~1,000-1,300 U.S. incident patients eligible for treatment[6]

Avapritinib is approved in the U.S. for GIST patients with PDGFRA exon 18 mutations only, which are harbored by an estimated ~6% of patients with newly diagnosed GIST.

Notes: mPFS=median progression free survival; mOS=median overall survival; HR=hazard ratio; (1) American Cancer Society, Key Statistics for Gastrointestinal Stromal Tumors, Accessed December 13, 2019; (2) Sutent [package insert]. New York, NY: Pfizer; 2011, mPFS and mOS converted from weeks to months; (3) Garrett CR, et al. Poster presented at: Connective Tissue Oncology Society: November 13-15, 2008; London, UK. Abstract 35049;. (4) Stivarga [package insert]. Germany: Bayer Healthcare; 2013; (5) QINLOCK [package insert]. Waltham, MA: Deciphera Pharmaceuticals; 2020; (6) Internal Deciphera estimates of annual new treatment-eligible patients are based on analyses of U.S. claims data; eligible patients for 3rd and 4th lines exclude the estimated proportion of patients across lines that die, discontinue oncology treatment, or enter clinical trial and, therefore, are not eligible for treatment. Estimates are inherently uncertain.

QINLOCK™: 4 Strategic Objectives For Launch

1 **Educate and raise awareness**	• Extensive mutational heterogeneity drives resistance to established therapies
2 **Differentiate QINLOCK™**	• Novel switch control mechanism of action • Potent inhibition of broad spectrum of mutations in vitro • Potentially practice-changing efficacy • Favorable tolerability with low dose modifications due to AEs
3 **Reach and impact GIST prescribers**	• Academic centers of excellence • Community practices
4 **Optimize patient access**	• Deciphera AccessPoint™ • Comprehensive patient support programs and resources

QINLOCK™: Launch Readiness

MEDICAL AFFAIRS

- ✓ MSL team built and engaging with KOLs in scientific exchange
- ✓ Publication plan implemented
- ✓ Medical information launch-ready

MARKETING

- ✓ Go-to-market strategies defined and launch tactics built
- ✓ QINLOCK marketing materials developed
- ✓ Launch plan adapted for virtual commercialization

MARKET ACCESS

- ✓ Market access field team hired and fully trained
- ✓ Payer meetings have been taking place for several weeks
- ✓ Distribution model in place
- ✓ Deciphera AccessPoint launched

SALES

- ✓ Sales team hired and fully trained
- ✓ Customer segmentation & targeting complete
- ✓ Remote detailing capabilities implemented
- ✓ Launch meeting complete

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Notes: MSL=medical science liaison; KOL=key opinion leader; HCP=healthcare professional; VP=vice president.

QINLOCK™: Value Proposition

- Rare disease
- High unmet need
- Potentially best-in-class clinical profile
- Commitment to patient access

QINLOCK™ is expected to be available next week

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Offers timely, reliable solutions that can help patients get started on QINLOCK™

Insurance Support

Benefits investigations (BIs)

Comprehensive insurance verification for patients and providers

Prior authorizations (PAs)

For patients who require a PA, detailed information to support expedited submission

Appeals

If a health plan denies coverage, supportive documentation to assist with appeal submission

Financial Assistance

Commercial Copay Program

For eligible patients with commercial insurance, patients may pay as little as a $0 copay

Connection to Foundation Funding

Patients with Medicare, Medicaid, or military insurance may be eligible to receive financial help from foundations or other third-party organizations

Patient Assistance Program

Patients with no insurance or no coverage for QINLOCK™ may qualify for free medication

Temporary Supply

RAPID START

The Rapid Start program can help patients that experience a delay in receiving a coverage determination to get started on QINLOCK™ right away. Eligible patients receive a 10-day supply

The BRIDGE program

With the Bridge program, patients who experience a gap in coverage may be eligible for a temporary supply of QINLOCK™. Eligible patients receive a 10-day supply

Services can be accessed at DecipheraAccessPoint.com, or by calling 1-833-4DACCES (1-833-432-2237)

Closing Remarks

Dan Flynn
Executive Vice President, Chief Scientific Officer
and Founder

Closing Remarks

Steve Hoerter
President and Chief Executive Officer

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DEFEATING CANCER: The Challenge. Our Mission.

Q&A

THANK YOU

We are grateful to all the patients, their families, physicians, and nurses who participated in our clinical trials and played a significant role in making this moment possible.

Thank you to our team at Deciphera whose hard work and dedication led to our first FDA approval. We appreciate your dedication to those living with GIST. This would not have been possible without your efforts.

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