Viking Therapeutics

Novel therapeutics for metabolic diseases

Corporate presentation

April 2014

Forward Looking Statements

This presentation contains statements about our future expectations, plans and prospects that constitute forward-looking statements for purposes of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by these forward-looking statements as a result of various important factors, including risks relating to: both our and our collaborators' ability to successfully research, obtain regulatory approvals for, develop and commercialize products based upon our technologies; our ability to obtain and maintain proprietary protection for our technologies and product candidates, including our liver-targeting drug candidates; competitive pressures; our ability to obtain and maintain strategic collaborations; our ability to successfully execute on, and receive favorable results from, our proprietary drug development efforts; and our ability to raise additional funds to finance our operations.

The forward-looking statements included in this presentation represent our views as of the date of this presentation. We anticipate that subsequent events and developments will cause our views to change. While we may elect to update these forward-looking statements in the future, we specifically disclaim any obligation to do so. These forward-looking statements should not be relied upon as representing our views as of any date subsequent to the date of this presentation.

Investment Highlights

- First-in-class program for type 2 diabetes, VK0612
- Novel small molecule gluconeogenesis inhibitor
- Clinical POC completed; phase IIb planned
- Differentiated commercial profile; potentially superior efficacy, excellent preliminary safety
- Attractive market positioning, opportunity
- Experienced management team and advisors

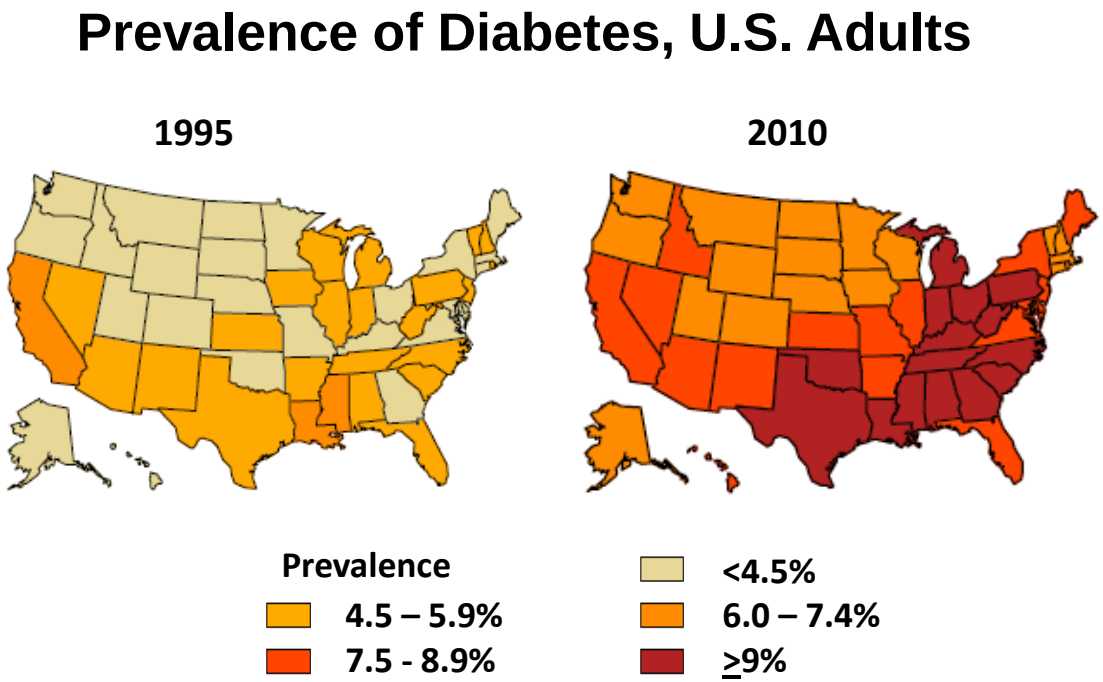
Diabetes, A Growing Healthcare Challenge

25.8M U.S. Cases

- 18.8M diagnosed
- 7.0M undiagnosed
- >90% Type 2

Economic impact

- $245B in healthcare costs in 2012



Long-term complications: renal failure, vision loss, amputation, death

Global prevalence projected to exceed 500M by 2030

References: Centers for Disease Control, American Diabetes Association, International Diabetes Federation

Robust Appetite for New Therapies

- Market size suggests multiple blockbusters possible, as with hypertension, statins
- Demand for new mechanisms despite existing options
- Recent launches have enjoyed rapid adoption even with modest antiglycemic effects; e.g. DPP-4 inhibitors

Drug	2007	2008	2009	2010	2011	2012	2013
Januvia/Janumet (sitagliptin)	$668	$1,397	$2,580	$3,339	$4,687	$5,745	$5,833
Tradjenta (linagliptin)	-	-	-	-	$30	$177	$498
Onglyza/Kombiglyze (saxagliptin)	-	-	$24	$158	$473	$709	$877
Galvus (vildagliptin)	-	$55	$181	$391	$677	$910	$1,200
Nesina/Liovel (alogliptin) (2)	-	-	-	-	$196	$451	$513
Total DPP-4 sales (1)	**$668**	**$1,452**	**$2,785**	**$3,888**	**$6,063**	**$7,992**	**$8,921**
Global growth rate	**-**	**117%**	**92%**	**40%**	**56%**	**32%**	**12%**

Notes: (1) Global sales, in $M. (2) Japan only through 1H13, U.S. launch June 2013.

Existing Landscape Presents Opportunities

- Strengths: Current Landscape
  - Weight neutral (metformin, DPP-4, SGLT inhibitors)
  - Improved side effect profiles vs. older therapies
- Weaknesses: Current Landscape
  - Generally modest efficacy; HbA1c δ -0.6% to -0.8%
  - Questionable durability, long-term safety concerns
  - Differentiation; 93 ongoing phase III trials, 0 new targets/mechanisms
- Opportunities for New Therapies
  - Differentiated, complementary mechanisms to be embraced
  - Improved efficacy, durability, safety key competitive advantages

VK0612 Market Potential: Base Case >5M Patients

18.8M patients
- 58% on OAD
- 14% OAD + injectible
- 12% Insulin only
- 16% No medication

1.7M Annual Diagnoses

CDC 2011 Diabetes Fact Sheet

~11 Years From Diagnosis

Diet and Exercise

10.9M patients			2.6M patients	
1st-Line (16%)	**2nd-Line** (27%)	**3rd-Line** (28%)	**4th-Line** (14%)	**5th-Line** (15%)
Metformin or SU (1 drug)	Add-on DPP-4, TZD, SU (2 drugs)	Add-on 2nd OAD (3 drugs)	Injectible GLP-1, Insulin +/- OADs	

Annual New Patients

35% of 1st-line OAD scrips are non-metformin

600K Patients/yr
$1.7B

Existing Patients

5% Metformin intolerant	15% Metformin contraindicated	25% Metformin switch at 1 year	42% to 52% Metformin refractory within 5 years
550K Patients $1.6B	1.6M Patients $4.7B	2.2M Patients $6.3B	2.8M Patients $7.9B

Base case = no metformin combo Total Mkt = $17-22B =

Substantial base opportunity:

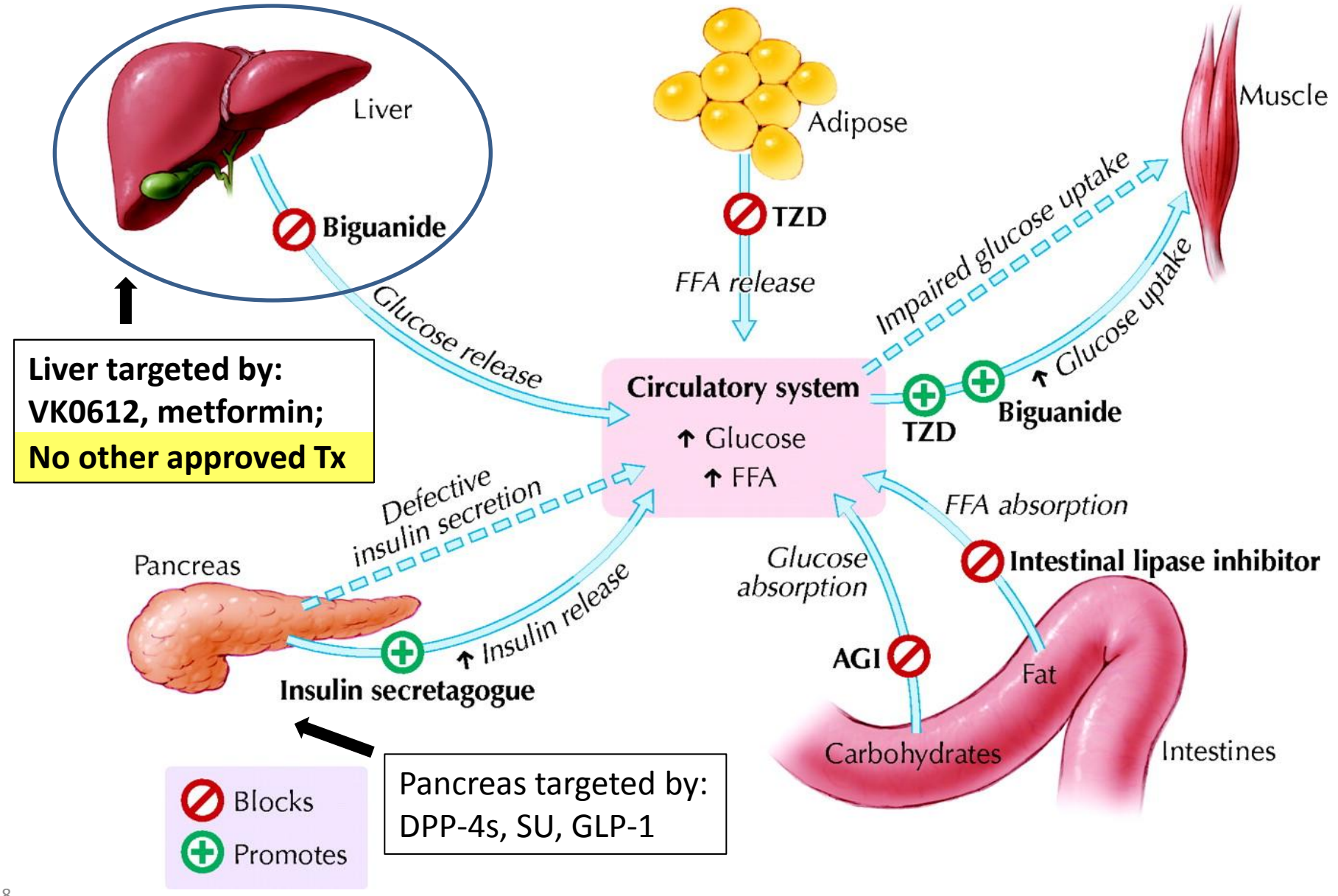
5.5M to 7.1M Existing patients; 600K new starts annually

Best case = all combination possibilities = **13.5M Existing patients; 1.7M new diagnoses annually**

VK0612 Target Markets: Severe 1st-line patients, 2nd-line and refractory patients, metformin-intolerant, contraindicated, switches

References: 1) *Am J Med,* **125**(3), 302.e1-e7 (2012). 2) *Diabetes Care,* **33**, 501-506 (2010). 3) Garber, Diabetes Mellitis, 3rd ed., 1123-1138, (2000). 4) CADTH Optimal Therapy Report; Current Utilization of 2nd- and 3rd-Line Therapies in Patients with Type 2 Diabetes, **4**, (2010). 5) *N Engl J Med.* 366(24), 2247-2256 (2012). 6) L.E.K. Consulting, LLC, market research (2007)

Targets for Therapeutic Intervention



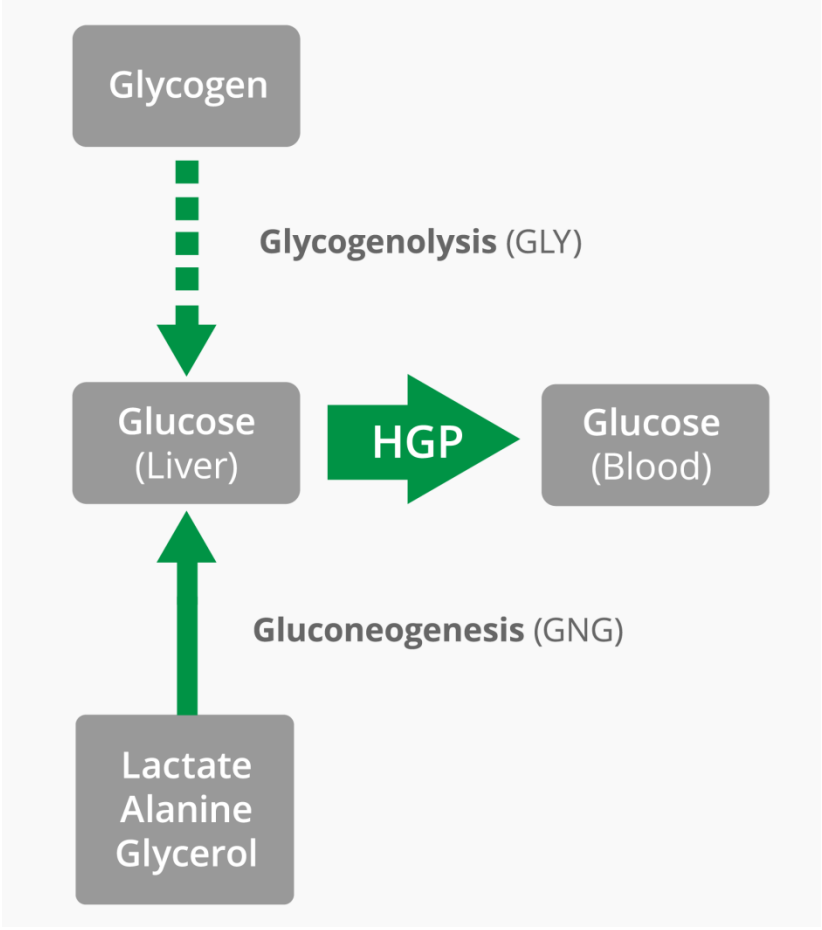
Liver targeted by:
VK0612, metformin;
No other approved Tx

Pancreas targeted by:
DPP-4s, SU, GLP-1

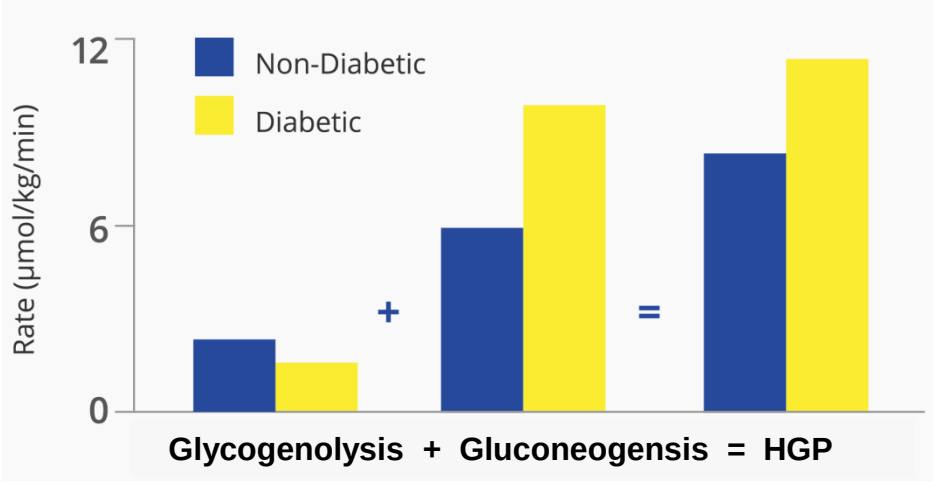
Hepatic Gluconeogenesis

Attractive pathway for diabetes therapy

Hepatic Glucose Production (HGP)



Contributions to HGP



- **GNG Elevated in type 2 diabetes**
- **Major source of glucose output**
- **Contributes ~70% of FPG**

References: 1) *J.Clin.Invest*. **90**, 1323-1327 (1992). 2) *Diabetes*, **49**, 1367-1373 (2000) 3) *Diabetes*, **59**, 2063-2069 (2000).

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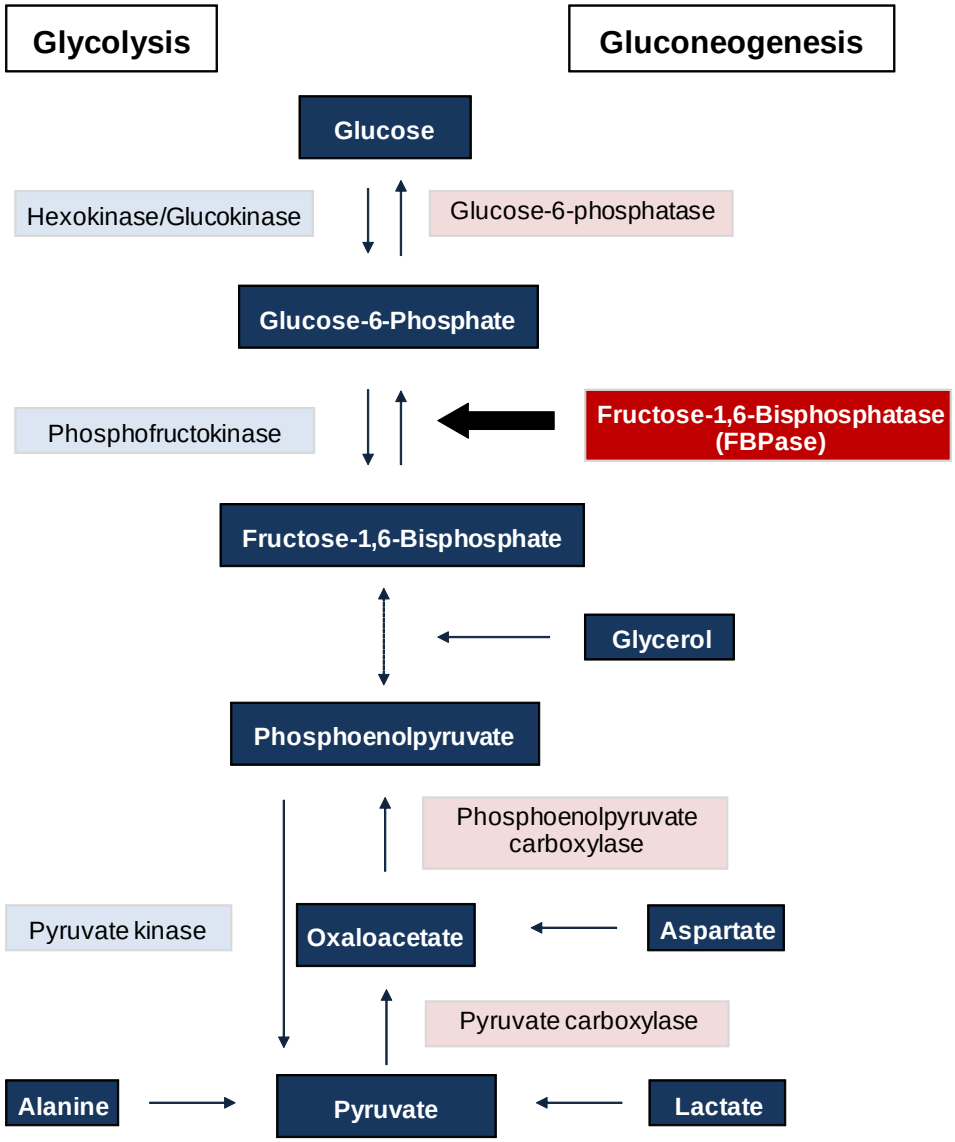
Fructose-1,6-Bisphosphatase, FBPase



- Target of VK0612
  - Low nM inhibitor
- Plays critical role in GNG
  - Increased activity in T2D
  - Rate-limiting enzyme
- Primarily expressed in liver
- Independent of glycogenolysis
  - Reduces risk of hypoglycemia

References: 1) van Poelje et al., Handbook of Experimental Physiology, Diabetes – Perspectives in Drug Discovery, Schwanstecher ed., 279-298, (2011).
2) *Drug Disc. Today* **4**:103-109, 2007.

Known Genetic Deficiency Provides Insight

- Baker-Winegrad Disease, 1970
- Patients lack functional fructose-1,6-bisphosphatase
  - Effectively a human knock-out model
- Once diagnosed, controlled through diet and behavior; patients otherwise healthy with normal lifespan
- Suggests attractive target for type 2 diabetes
  - Lack of long-term complications/comorbidities encouraging

References: 1) *Lancet*, 7662: 13-16 (1970). 2) *J. Clin. Invest.* **51**, 2115-2123, 1972. 3) *Am.J.Dis.Child* **131**:418, 1977. 4) *Am.J.Dis.Child* **143**:140, 1989.

Our Lead Program: VK0612

- Selective 31nM inhibitor of fructose-1,6-bisphosphatase
- Successful phase IIa study: Highly clinically and statistically significant effects on plasma glucose
- Safe, well-tolerated
- PK, formulation conducive to QD dosing
- Differentiated mechanism, facilitates combinations
- Significant target markets: Poorly controlled patients, metformin-refractory, contraindicated, intolerant, switches

VK0612: Clinical Overview

- Five Phase I studies completed
  - Evaluated safety/tolerability and PK
    - Single doses of up to 1000 mg
    - Multiple doses of up to 400 mg QD for 14 days
- Promising safety, tolerability (>300 patients)
    - No hypoglycemia, no lacticemia
    - GI events similar across treatment groups
- Successful 14-day phase Ib, 28-day phase II
    - Highly clinically, statistically significant antiglycemic effects
    - Attractive HbA1c-lowering potential

VK0612: 28-Day Phase IIa Highlights

- Five arm, dose-ranging study, QD dosing (n=100)
- Day 28 vs. Baseline ΔFPG (mg/dL): Statistically and clinically significant glucose lowering

Patients			ΔFPG		PBO-adjusted ΔFPG	
Cohort	**N**	**Baseline FPG ***	**Mean**	**95% CI**	**Mean**	**95% CI**
Placebo	23	185.0 (41.7)	8.2	(-8.4, 24.7)	-----	-----
10 mg	13	177.7 (46.9)	7.4	(-14.7, 29.5)	-0.7	(-28.3, 26.9)
50 mg	23	174.8 (39.0)	5.3	(-11.4, 22.0)	-2.9	(-26.4, 20.6)
100 mg	23	187.6 (38.0)	8.1	(-8.4, 24.7)	0	(-23.5, 23.4)
200 mg	**23**	**206.4 (50.7)**	**-20.7**	**(-37.7, -3.8)**	**- 28.9 ****	**(- 52.6, - 5.1)**

* mean (SD)

** p = 0.0177

- Linear regression suggests efficacious dose = 200 - 400mg

VK0612: Phase IIa Data, Advanced Patients

Patients with baseline FPG ≥ 180 mg/dL

Patients			ΔFPG		PBO-adjusted ΔFPG	
Cohort	N	Baseline FPG *	Mean	95% CI	Mean	95% CI
Placebo	12	216.3 (30.0)	15.2	(-12.6, 43.0)	-----	-----
10 mg	6	215.5 (40.3)	18.2	(-21.2, 57.5)	3	(-45.1, 51.1)
50 mg	8	218.4 (19.3)	-2.6	(-36.6, 31.4)	-17.8	(-61.7, 26.1)
100 mg	14	212.3 (20.7)	0.6	(-25.3, 26.6)	-14.5	(-52.4, 23.4)
200 mg	**16**	**230.6 (39.0)**	**-34.6**	**(-59.1, -10.0)**	**- 49.7 ****	**(- 87.0, - 12.5)**

* mean (SD)

** p = 0.0099

- Efficacy increases with disease severity, mirrors prior experience
- Excellent profile for advanced, poorly controlled patients
- Typical FPG to HbA1c conversion ~35mg/dL = 1% HbA1c

References: *Diabetes Care,* **131**:275-278, 2002.

VK0612: 14-Day Phase Ib Highlights

- Four arm, placebo-controlled, BID dosing (n=42)
  - Important enrollment criterion: FPG ≥ 180mg/dL
- Results: Clinically, statistically significant effect on FPG
- 200mg, 400mg BID: Potential HbA1c effect -1% to -1.5%

Patients			Day 15 ΔFPG	PBO-adjusted ΔFPG	
Cohort	N	Baseline FPG *	Mean (SD)	Mean	p-value
Placebo	10	245.1 (33.1)	-14.4 (66.4)	-----	-----
50 mg	12	219.8 (34.6)	-30.0 (55.2)	-15.6	0.48
200 mg	**10**	**218.3 (31.8)**	**-72.4 (56.6)**	**-58.0**	**0.01**
400 mg	**10**	**202.5 (34.9)**	**-69.3 (54.6)**	**-54.9**	**0.03**

* mean (SD)

VK0612: Phase Ib Safety, Tolerability Data

Safety Takeaways

- Safe at all doses; No drug-related SAEs
- Dose-limiting nausea, vomiting at 400mg BID
- Well-tolerated at 200mg BID
- No hypoglycemia
- No lactic acidosis
- No discontinuations due to lab abnormalities

VK0612: Development Summary

Human POC successfully demonstrated

- Glucose-lowering observed throughout the day
  - Preliminary FPG data: Outstanding HbA1c potential
  - Weight-neutral, lipid-neutral
- Safe and well-tolerated
  - MTD, dose-limiting tolerability identified
  - >300 patients in database; no drug-related SAEs
- Promising benefit/risk profile vs. competitive landscape

VK0612: Attractive Competitive Profile

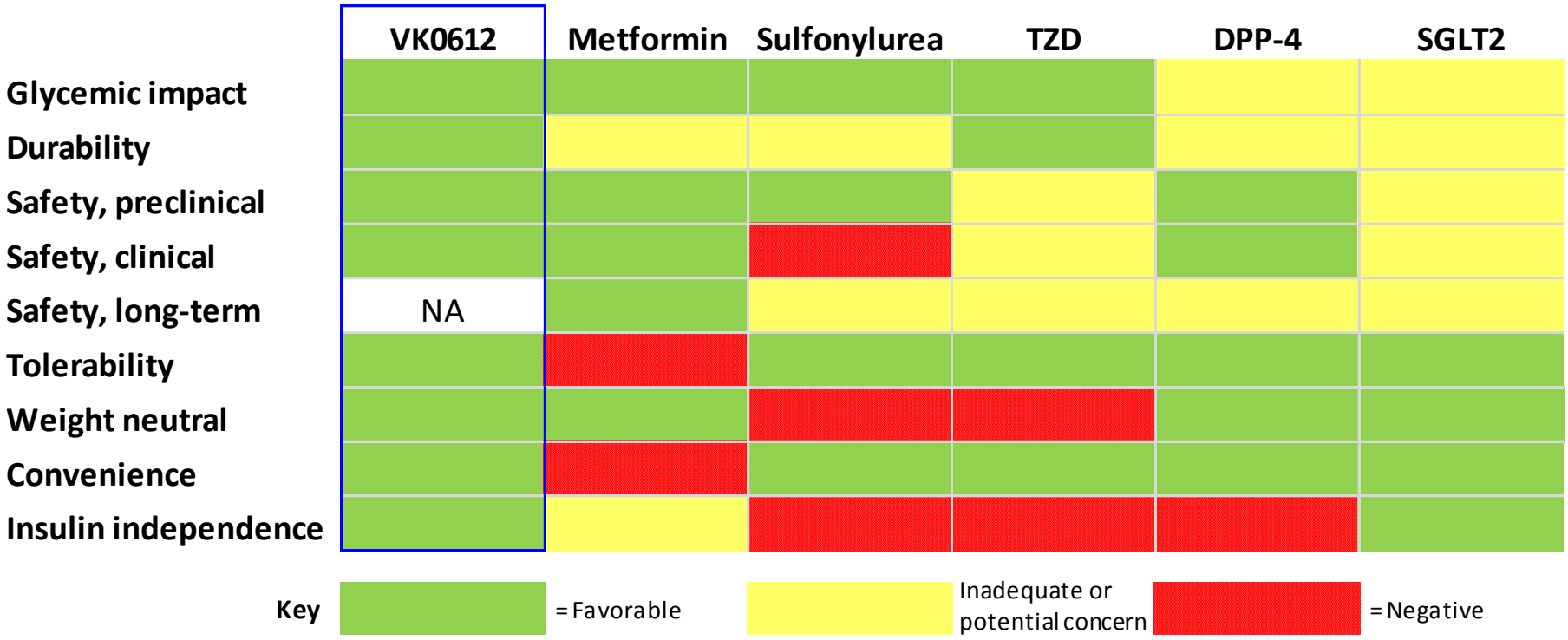
Drug	Target	ΔFPG mg/dL (wks)[1]	ΔHbA1c % (wks)	ΔWeight	Safety, Tolerability, Other
VK0612	**FBPase**	**-50[2] to -58[3] (2 to 4)**	**Expect -1.0 or greater**	**Neutral**	**Dose limiting nausea at >2x potential commercial doses**
Sitagliptin	DPP4	-20 (12)	-0.6 (12)	Neutral	Modest efficacy, pancreatitis, pancreatic lesions, HF risk (?)
Metformin	Unknown	-59[4] (24)	-1.8 (24)	Neutral	GI intolerance, renal contraindications, elderly, rare lactic acidosis
Pioglitizone	PPAR	-41[5] (26)	-1.0 (26)	Modest weight gain	CHF, edema, oncogenic signal, bone fractures
Canagliflozin	SGLT	-43 (26)	-1.2 (26)	Modest weight loss	Genital infections, increased hepatic glucose output, durability, increased LDL, renal contraindication, bone fractures
Glucokinase activators[6]	Glucokinase	-6 to -11 (14-16)	-0.4 to -0.9 (14-16)	Modest weight gain	Lipidemia, waning efficacy, hypoglycemia, liver enzymes
Glucagon antagonists	Glucagon	-30 to -40 (4)	-0.6 to -0.8 (12)	Neutral	Variable dose-response; LDL, liver enzyme elevations; hypoglycemia

Notes and references: (1) Placebo-adjusted. (2) Baseline FPG 231mg/dL. (3) Baseline FPG 221mg/dL. (4) Baseline FPG 242mg/dL. (5) 30mg QD, baseline FPG 269mg/dL. (6) Various MK-0941, AZD1656 data.

VK0612 vs. Existing Landscape

Commercial profile compares favorably to existing agents

- Efficacy, safety, durability, convenience, mechanism



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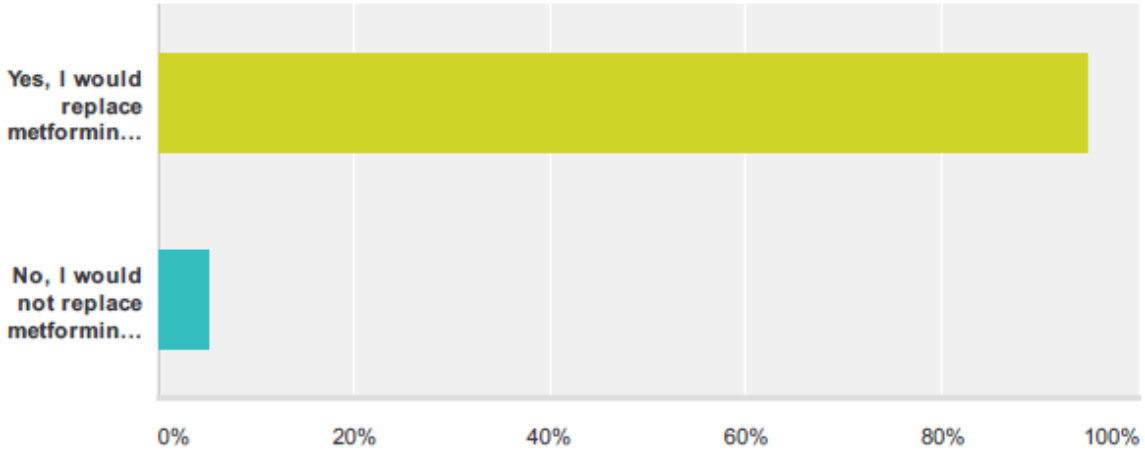
What do endocrinologists think?

Market research: Significant opportunity in multiple settings

Example, poorly-controlled patients:

Q: Suppose the therapy above demonstrated efficacy in patients no longer receiving benefit from a metformin-containing regimen. Would you replace metformin with the new drug in a combination regimen?



Yes: 94.7%

No: 5.3%

- Secondary failure rate for metformin ~17%/year, >40% at 3-5yrs
- Prescribing trends suggest ~200K new patients/yr = $600M market/yr

References: 1) Viking Therapeutics, Inc., proprietary market research, 3Q13; n=20. 2) *Diabetes Care,* **33**, 501-506 (2010).

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VK0612: Efficacy in Metformin-Experienced

Phase Ib: Patients receiving metformin at screening visit

Cohort	N	Mean FPG at screening (mg/dL)[1]	Mean FPG, Day 14[2]	Day 14 ΔFPG vs. Screening visit	Placebo-adjusted Day 14 ΔFPG vs. Screening visit
Placebo	9	172	236	65	-
200mg	**8**	**183**	**151**	**-32**	**-97**
400mg	**7**	**170**	**138**	**-32**	**-97**

Notes: 1) Screening visit 2-4 weeks prior to first dose. 2) Primary efficacy analysis.

- Glucose-lowering effect observed in refractory patients
- Highlights differentiated mechanism vs. metformin
- Survey: Significant interest in 1st-line, additional settings

FBPase: Extensive Prior Validation

- Historically attractive but difficult to approach
  - PFE, ABT, Roche, NVO, others
  - Challenges: potency, selectivity, PK
- Daiichi-Sankyo/Metabasis; Most successful
  - Discovered novel class of potent, selective, pharmaceutically relevant small molecule inhibitors
  - Lead CS-917, first-generation FBPase inhibitor
  - Demonstrated *in vitro*, *in vivo*, and clinical POC
  - Completed 3 phase II trials, ~900 patient database

Daiichi-Metabasis CS-917, Clinical Summary

Phase II Overview

- 14 and 28 day studies demonstrated human POC
- Statistically significant anti-glycemic effects

Phase IIb Highlights: 12 week BID dosing, 400 patients

- Sub-optimal (low) dose, mild patient population = low chance of success
- Trial failed to demonstrate statistically significant change in HbA1c
- CS-917 program discontinued; Daiichi-Metabasis partnership terminated

Phase IIb Extension: 24-week, promising longer-term efficacy, safety

- Statistically significant reduction in HbA1c (-0.37%, p = 0.0036)
- Durable effect; 24-week safety; no problematic lactate elevation

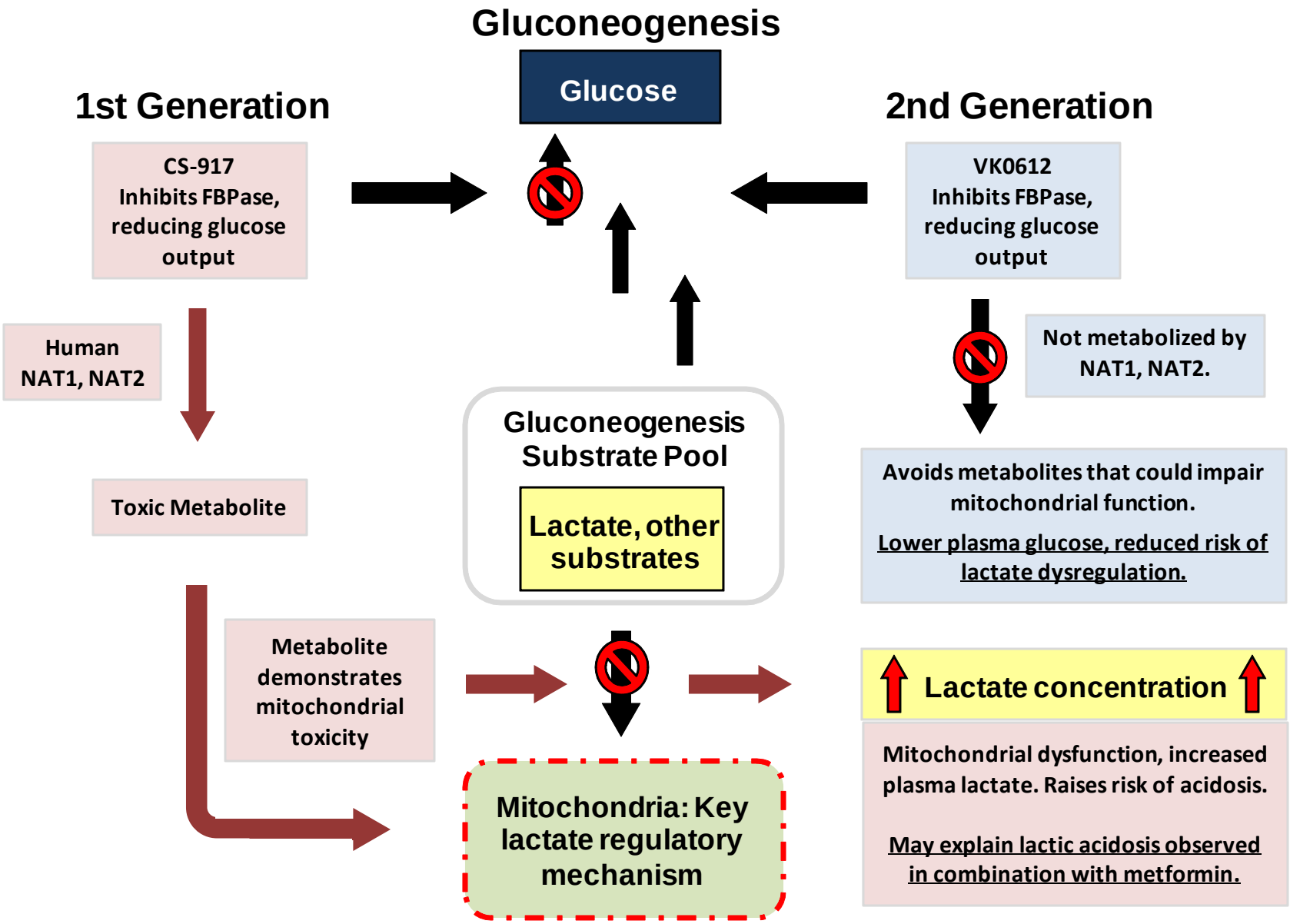
Daiichi-Metabasis CS-917: Takeaways

Clinical Experience Validates FBPase Target for T2D

- Best efficacy in poorly controlled patients; baseline FPG ≥ 180mg/dL

	Placebo	50 BID	100 BID	200 BID	Metformin
4 Week Phase 2a Trial, All Patients (Study 202)					
N =	**35**		**37**	**36**	
Δ FPG at 4 weeks, all patients (mg/dL)	**+30.2**		**-1.4**	**-11.1**	
Placebo-corrected Δ FPG			**-31.6** p=0.0018	**-41.3** p<0.0001	
12 Week Phase 2b Trial, Subgroup With FPG ≥ 180mg/dL (Study 205)					
N =	**20**	**23**	**26**		**35**
Δ FPG at 12 weeks (mg/dL)	**+25.0**	**-21.0**	**-13.1**		**-42.4**
Placebo-corrected Δ FPG		**-46.0** p=0.0104	**-38.1** p=0.0295		**-67.4** p<0.0001

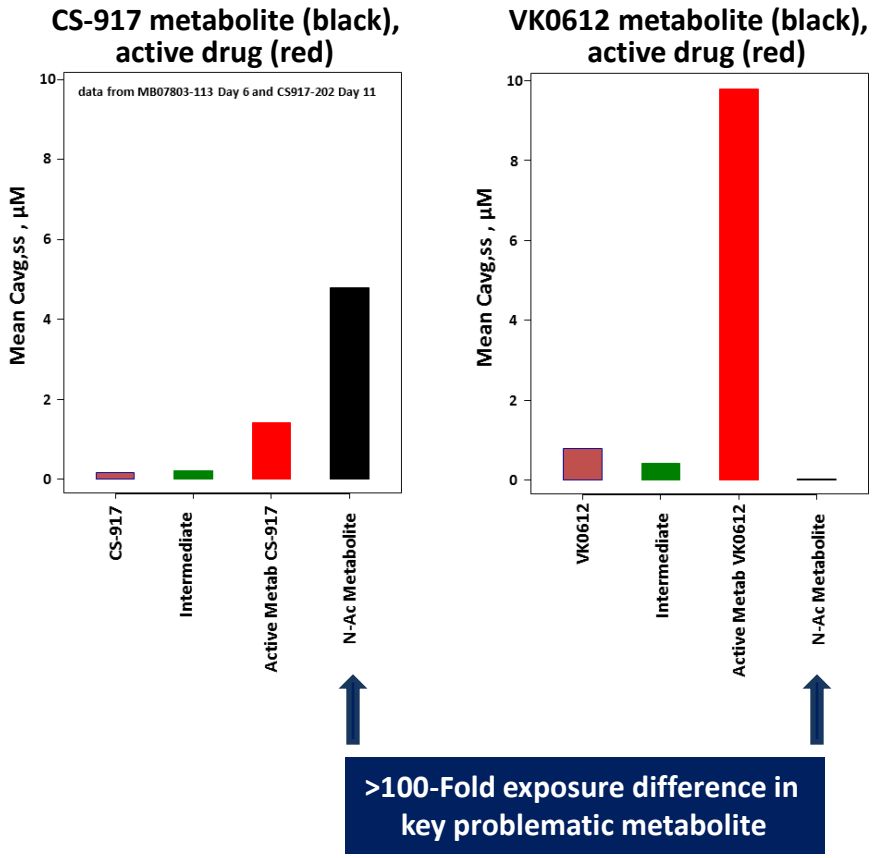
VK0612 vs. CS-917, Issues and Implications



VK0612 vs. CS-917 Comparative Profile

Key differences: VK0612 vs CS-917

- Resistant to metabolic inactivation
- Not toxic to mitochondria
- Increased oral bioavailability
- ~5x higher plasma levels
- Longer T½ (~20h)
- Potential for QD dosing
- Reduced drug variability
- Results in higher, more durable, consistent, safer exposures



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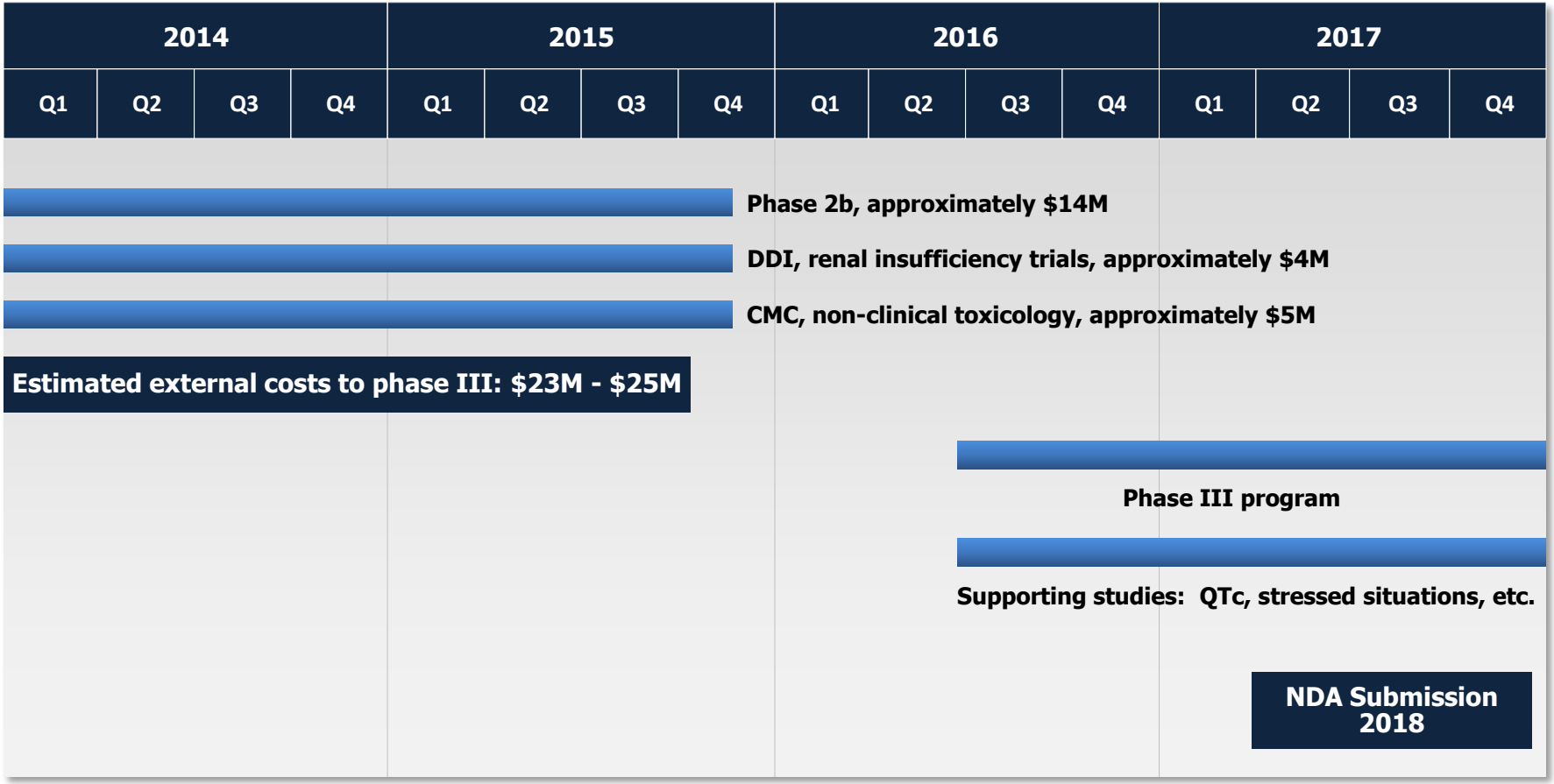
VK0612: Development Plans

- Conduct phase IIb trial
  - Multi-arm dose ranging
  - 12-Week study to assess HbA1c
  - Metformin comparator (not powered for superiority)
- Conduct parallel exploratory phase I trials
  - Metformin combination
  - Renally impaired population
- Data possible 2H15

VK0612: Development Timelines, Costs

Development Timeline



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Summary of Potential Phase III and CV Plans

- FDA diabetes requirements: ≥2500 exposures, ≥1,300 for 1 year, ≥300 for 18 months
- CV safety analysis from ≥1,300 patients; focus on 95% Confidence Interval around Hazard Ratio, relative risks
  - If upper bounds of HR CI >1.8, pre-market CV study
  - If upper bounds of HR CI >1.3 – 1.8<, post-mkt CV study
- Many possible scenarios, two examples:

Scenario 1	Scenario 2
5 - 6 phase III trials; total N=4,900	5 phase III trials; total N=8,250
No dedicated CV study; phase III trials enroll up to 30% high risk patients	Dedicated 6,500 patient CV study with interim analysis; embeds 2 phase III trials
Events sufficient for HR analysis and NDA filing in approximately 2 years	Events sufficient for HR analysis and NDA filing in approximately 1.5 - 2 years
Estimated external cost to NDA = $165M	Estimated external cost to NDA = $180M

Licensing Terms, Intellectual Property

- $1M Up-front to Ligand
- $38M Clinical and regulatory milestones
  - Includes $33M post-phase III
  - No commercial/sales milestones
- $10M Each for EU, Japan approvals
- Tiered royalties to low double-digit
- Composition of matter to 2025
- Additional filings planned
  - Expect runway to extend >2030

Management

Nimble model minimizes expenses, accelerates decisions

CEO: Brian Lian, Ph.D.

SunTrust, CIBC World Markets, Amgen

CMO: Rochelle Hanley, MD, FACP

GSK, QuatRx, Pfizer, Parke-Davis, Duke University

COO: Misha Dinerman, MD

Piper Jaffray, CIBC World Markets

SVP, Drug Development: Joseph Lambing, Ph.D.

Portola, Millennium, COR Therapeutics

VP, Clinical Operations: Confidential

Pfizer, Metabasis, 20+ years clinical operations experience

Consultants and Advisors

- David Bullough, Ph.D.

  VP, Preclinical Development, RaNA. Former Executive Director, Metabolic Diseases, Pfizer. Former VP and Head of Pharmaceutical and Preclinical Development, Metabasis Therapeutics.

- Alan D. Cherrington, Ph.D.

  Professor of Molecular Physiology and Biophysics, Professor of Medicine, Turner Chair in Diabetes Research, Vanderbilt University Medical Center. Past President, American Diabetes Association.

- G. Alexander Fleming, MD

  CEO, Kinexum. Former Head, Metabolic and Endocrine Drug Products, FDA. Co-author, WHO Guide to Good Clinical Practice. Former member, ICH working group E-6, Good Clinical Practice.

- Trevor Gibbs, MD

  Founder, ClinSentry, Ltd. Chair, Cambridge Clinical Trials Unit Steering Committee. Former Head, Clinical Development, Medical Affairs, Safety, Pharmacovigilance & Medical Governance, GSK.

- Scott J. Hecker, Ph.D.

  VP, Chemistry, Rempex. Former VP, Chemistry, Metabasis Therapeutics. Former VP, Chemistry, Microcide Pharmaceuticals. Former Group Leader, Antibiotic Drug Discovery, Pfizer.

- Laurence Jay Korn, Ph.D.

  Founder, former CEO and Chairman, Protein Design Labs, Inc. Former Professor, Department of Genetics, Stanford University.

- Paul van Poelje, Ph.D.

  Former Head, Biological Sciences, Metabasis Therapeutics. Former Sr. Director, Cardiovascular, Metabolic, Endocrine Diseases, Pfizer.

Viking Therapeutics, Summary

- Lead program VK0612: Novel, first-in-class drug candidate for type 2 diabetes
- Differentiated mechanism with competitive advantages
- Excellent clinical POC data suggest potency, safety, combinability, attractive commercial profile
- Phase IIb, metformin, renal insufficient studies planned
- Significant market opportunities: Poorly-controlled, refractory, metformin contraindicated, intolerant
  - Base Case: 5M patients; Best Case: 13.5M patients