USE OF FUNDS

Project: Development of an Oral Radiation Mitigator for Gastrointestinal Acute Radiation Syndrome (GI-ARS)

Executive Summary

This project outlines the development of a first-in-class oral drug to mitigate Gastrointestinal Acute Radiation Syndrome (GI-ARS), a life-threatening condition caused by high-dose radiation exposure. The strategy follows a structured, regulatory-compliant development pathway comprising:

- IND-enabling preclinical studies
- GMP synthesis and oral formulation
- Phase I clinical safety trials
- Regulatory approval via the FDA Animal Rule (21 CFR 314.600–650; 21 CFR 601.90–95)

The goal is to achieve FDA approval based on animal efficacy and human safety data, given the ethical impracticality of human efficacy studies in radiation injury cases.

1. IND-Enabling Preclinical

Studies Scope:

- GLP toxicology
- GMP synthesis and scale-up
- Oral formulation development
- Stability testing
- Batch validation

Key Activities

1.1 Toxicology Studies	Acute, subchronic, and genotoxicity; toxicokinetics; potential reproductive toxicity (GLP-compliant)
1.2 GMP Synthesis	Scale-up to 4 kg; clinical-grade drug production in partnership with TCG GreenChem
1.3 Oral Formulation Development	Develop bioavailable dosage form (tablet/capsule/suspension); bioavailability & PK profiling
1.4 Stability Testing	Long-term and accelerated testing; degradation and packaging compatibility
1.5 Batch Validation	Production of CTM with quality control for purity, potency, and shelf life

Cost Breakdown: IND-Enabling Preclinical Studies

Activity	Estimated Cost
Toxicology Studies (GLP)	$3,000,000
GMP Synthesis (4 kg)	$4,000,000
Oral Formulation Development	$1,000,000
Stability Testing (6–12 mo.)	$600,000
Batch Validation	$500,000
Total	**$9,100,000**

2. Phase I Clinical

Safety Trials Objective:

First-in-human trial in healthy volunteers to assess safety, tolerability, and pharmacokinetics.

Study Design Highlights

- Single-ascending dose (SAD) and multiple-ascending dose (MAD)
- Randomized, Adverse events, ECGs, labs, MTD
- Pharmacokinetics: Cmax, Tmax, AUC, $t\frac{1}{2}$
- Biomarker analysis (if validated)
- Oversight by independent DSMB

Cost Breakdown: Phase I Clinical Trials

Activity	Estimated Cost
Study Design and Setup	$1,000,000
Participant Recruitment & Ops	$2,000,000
DSMB and Safety Monitoring	$250,000
Data Management & Reporting	$500,000
Legal and Regulatory Contracting	$500,000
Total	**$4,250,000**

3. Animal Rule Efficacy

Studies Objective:
Demonstrate efficacy in animal models where human trials are not feasible.

Key Components

- Survival studies in Göttingen minipigs
- GI injury assessment, histopathology, and biomarkers
- Chronic toxicity monitoring
- NDA submission leveraging animal efficacy + human safety

Cost Breakdown: Animal Rule Studies

Activity	Estimated Cost
Efficacy Studies (Minipigs)	$3,000,000
Long-Term Safety & Toxicity Studies	$1,000,000
Regulatory Submission (NDA)	$500,000
Total	**$4,500,000**

4. Regulatory

Approval (FDA) Objective:
Submission and approval of NDA/BLA under the Animal Rule pathway.

Key Components

- Compilation of all study data
- NDA/BLA preparation and filing
- FDA filing fees

Cost Breakdown: Regulatory Approval

Activity	Estimated Cost
NDA/BLA Compilation & Submission	$1,000,000
FDA Filing Fees	$500,000
Total	**$1,500,000**

5. Corporate Operations, Salaries, Legal & Insurance

5.1 Corporate Structure Setup & Maintenance

Corporate Structure Setup & Maintenance

Item	Annual Cost
State & Incorporation Fees	$2,000
Registered Agent Services	$1,000
Legal (Corporate Docs)	$5,000
Annual Total	**$8,000**
3-Year Total	**$24,000**

5.2 Salaries—Key Personnel (40th Percentile Benchmark)

Salaries - Key Personnel (40th Percentile Benchmark)

Role	Annual Salary
CEO	300000
CSO	175000
Regulatory Affairs Consultant	125000
Chief Medical Officer Consultant	175000
Clinical Trials Manager	125000
Chief Operating Officer	175000
Head of Chemistry	150000
Head of Biology	150000
Admin Support	65000
Marketing/Branding/Web	60000
Board (3 members @ $50K)	120000
Annual Total	**$1,620,000**
3-Year Total	**$4,860,000**

5.3 Legal Fees (Corporate & Regulatory)

Legal Fees (Corporate Regulatory)

Legal Area	Annual Cost
General Corporate Counsel	$400,000
Regulatory Legal Support	$500,000
Patent/IP Legal	$400,000
Annual Total	**$1,300,000**
3-Year Total	**$3,900,000**

5.4 Insurance Coverage

Insurance Coverage

Type	Annual Cost
Clinical Trial Insurance	$100,000
General Liability + D&O	$100,000
Professional Liability (E&O)	$50,000
Annual Total	**$250,000**
3-Year Total	**$750,000**

Total Corporate Operations (3-Year Cost)

Corporate Operations

Component	3-Year Cost
Corporate Setup & Fees	$24,000
Personnel Salaries	$9,375,000
Legal Fees (Corrected)	$3,900,000
Insurance	$750,000
Total	**$14,049,000**

6. Contracts & Licensing

6.1 Georgetown University Licensing Buyout (Contractual Milestone Payments)

6.1.1 Dosing of first patient in Phase I clinical trial of Licensed Product.

6.1.2 Dosing of first patient in Phase II clinical trial of Licensed Product.

6.1.3 Dosing of first patient in Phase III clinical trial of Licensed Product.

6.1.4 First Regulatory Approval in any country of a Licensed Product.

Georgetown Contractual Milestone Payments

Incremental Payment	One-Time Cost
First Patient Dosing Phase 1	$50,000.00
First Patient Dosing Phase 2	$150,000.00
First Patient Dosing Phase 3	$250,000.00
First Regulatory Approval	$500,000.00
Total	**$950,000**

Total Project Cost Summary (with 4% Contingency)

Stage	Estimated Cost
IND-Enabling Studies	$9,100,000
Phase I Clinical Trials	$4,250,000
Animal Rule Studies	$4,500,000
Regulatory Approval (FDA)	$1,500,000
Corporate Structure Setup & Maintenance	$14,049,000
Contractual Milestone Payments	$950,000
Subtotal	**$34,349,000**
+ 4% Contingency	**$1,373,960**
Total Estimated Cost	**$35,722,960**

Note: Contingency covers unforeseen expenses such as delays, inflation, regulatory changes, tariffs, or expanded testing requirements.

Conclusion

This project provides a comprehensive, milestone-driven plan to develop an oral therapeutic for GI- ARS, with a projected cost of **$34.3 million over 3 years** ($35.7 million over 3 years with contingency cost). By leveraging a non-traditional regulatory pathway (Animal Rule), expert personnel, and strategic partnerships, this initiative has the potential to accelerate the availability of a life-saving countermeasure for radiation-induced gastrointestinal injury, addressing a critical unmet medical need and strengthening national preparedness for radiological emergencies.