

APPLICATION FOR FEDERAL ASSISTANCE
SF 424 (R&R)

2. DATE SUBMITTED 12/10/2024	Applicant Identifier
3. DATE RECEIVED BY STATE 	State Application Identifier

1. * TYPE OF SUBMISSION

☐ Pre-application ☒ Application ☐ Changed/Corrected Application

4. Federal Identifier

5. APPLICANT INFORMATION

* Organizational DUNS: 06-276-1671

* Legal Name: Michael Wurth

Department: Computer Science

Division:

* Street1: 20 East Washington Street

Street2:

* City: Iowa City

County: Johnson

* State: Iowa

Province:

* Country: USA: UNITED STATES

* ZIP / Postal Code: 52240

Person to be contacted on matters involving this application

Prefix: * First Name: Michael

Middle Name:

* Last Name: Wurth

Suffix:

* Phone Number: 319-471-1096

Fax Number:

Email: mike-wurth@uiowa.edu

6. * EMPLOYER IDENTIFICATION (EIN) or (TIN): N/A

7. * TYPE OF APPLICANT:

R: Small Business

Other (Specify):

Small Business Organization Type

☐ Women Owned

☐ Socially and Economically Disadvantaged

8. * TYPE OF APPLICATION:

☒ New ☐ Resubmission

☐ Renewal ☐ Continuation ☐ Revision

If Revision, mark appropriate box(es).

☐ A. Increase Award ☐ B. Decrease Award ☐ C. Increase Duration ☐ D. Decrease Duration

☐ E. Other (specify):

* Is this application being submitted to other agencies? Yes ☐ No ☒

What other Agencies?

9. * NAME OF FEDERAL AGENCY:

Health and Human Services

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER:

TITLE:

11. * DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:

CapRx: Generative AI Captions for Data Visualizations in Patient Portals

12. * AREAS AFFECTED BY PROJECT (cities, counties, states, etc.)

Iowa

13. PROPOSED PROJECT:

* Start Date

* Ending Date

12/10/2024

12/10/2026

14. CONGRESSIONAL DISTRICTS OF:

a. * Applicant

b. * Project

IA-02

IA-02

15. PROJECT DIRECTOR/PRINCIPAL INVESTIGATOR CONTACT INFORMATION

Prefix: Dr. * First Name: James

Middle Name:

* Last Name: Blum

Suffix:

Position/Title: Chief Health Information Officer

* Organization Name: University of Iowa Hospitals & Clinics

Department: Anesthesia

Division:

* Street1: 200 Hawkins Drive

Street2:

* City: Iowa City

County: Johnson

* State: Iowa

Province:

* Country: USA: UNITED STATES

* ZIP / Postal Code: 52240

* Phone Number: 1-800-777-8442

Fax Number:

* Email: James-Blum@uiowa.edu

16. ESTIMATED PROJECT FUNDING a. * Total Estimated Project Funding \$10,000,000 b. * Total Federal & Non-Federal Funds \$8,000,000 c. * Estimated Program Income \$800,000	17. * IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS? <div style="display: flex; align-items: flex-start;"><div style="margin-right: 10px;">a. YES</div><div><input type="checkbox"/> THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE: </div></div> <div style="display: flex; align-items: flex-start;"><div style="margin-right: 10px;">b. NO</div><div><input checked="" type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372; OR <input type="checkbox"/> PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW</div></div>
18. By signing this application, I certify (1) to the statements contained in the list of certifications* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances * and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001) <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-top: 5px;"><input checked="" type="checkbox"/> * I agree</div> <small>* The list of certifications and assurances, or an Internet site where you may obtain this list, is contained in the announcement or agency specific instructions.</small>	
19. Authorized Representative <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>Prefix: </div><div>* First Name: Michael</div><div>Middle Name: </div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* Last Name: Wurth</div><div>Suffix: </div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* Position/Title: Graduate Student</div><div></div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* Organization: University of Iowa</div><div></div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>Department: Informatics</div><div>Division: </div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* Street1: 2 W Washington Street</div><div></div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>Street2: </div><div></div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* City: Iowa City</div><div>County: Johnson</div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* State: Iowa</div><div>Province: </div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* Country: USA: UNITED STATES</div><div>* ZIP / Postal Code: 52240</div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* Phone Number: 319-XXX-XXXX</div><div>Fax Number: </div></div> <div style="display: flex; justify-content: space-between; margin-bottom: 5px;"><div>* Email: mike-wurth@uiowa.edu</div><div></div></div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"><div style="width: 45%;">* Signature of Authorized Representative <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Completed on submission to Grants.gov</div></div><div style="width: 45%;">* Date Signed <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Completed on submission to Grants.gov</div></div></div>	
20. Pre-application <div style="float: right; text-align: right;">Add AttachmentDelete AttachmentView Attachment</div>	
21. Attach an additional list of Project Congressional Districts if needed. <div style="display: flex; justify-content: space-between; margin-top: 5px;"><div style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em;"></div><div style="border: 1px solid black; padding: 2px 10px; margin: 0 5px;">Add Attachment</div><div style="border: 1px solid black; padding: 2px 10px; margin: 0 5px;">Delete Attachment</div><div style="border: 1px solid black; padding: 2px 10px;">View Attachment</div></div>	

PHS 398 Cover Page Supplement

OMB Number: 0925-0001

Expiration Date: 2/28/2023

1. Vertebrate Animals Section

Are vertebrate animals euthanized?

☐ Yes

☒ No

If "Yes" to euthanasia

Is method consistent with American Veterinary Medical Association (AVMA) guidelines?

☐ Yes

☐ No

If "No" to AVMA guidelines, describe method and provide scientific justification

2. *Program Income Section

*Is program income anticipated during the periods for which the grant support is requested?

☒ Yes

☐ No

If you checked "yes" above (indicating that program income is anticipated), then use the format below to reflect the amount and source(s). Otherwise, leave this section blank.

*Budget Period *Anticipated Amount (\$)

1/1/2025-
1/1/2026

\$800,000

*Source(s)

Subscription deals with healthcare providers

3. Human Embryonic Stem Cells Section

*Does the proposed project involve human embryonic stem cells?

☐ Yes

☒ No

If the proposed project involves human embryonic stem cells, list below the registration number of the specific cell line(s) from the following list: <http://stemcells.nih.gov/research/registry/>. Or, if a specific stem cell line cannot be referenced at this time, check the box indicating that one from the registry will be used:

☐ Specific stem cell line cannot be referenced at this time. One from the registry will be used.

Cell Line(s) (Example: 0004):

4. Human Fetal Tissue Section

*Does the proposed project involve human fetal tissue obtained from elective abortions?

Yes ☐

No ☒

If "yes" then provide the HFT Compliance Assurance

Add Attachment

Delete Attachment

View Attachment

If "yes" then provide the HFT Sample IRB Consent Form

Add Attachment

Delete Attachment

View Attachment

PHS 398 Cover Page Supplement

5. Inventions and Patents Section (for Renewal applications)

*Inventions and Patents: Yes ☐ No ☐

If "**Yes**" then answer the following:

*Previously Reported: Yes ☐ No ☐

6. Change of Investigator/Change of Institution Section

☐ Change of Project Director/Principal Investigator

Name of former Project Director/Principal Investigator:

Prefix:

*First Name:

Middle Name:

*Last Name:

Suffix:

☐ Change of Grantee Institution

*Name of former institution:

RESEARCH & RELATED Other Project Information

OMB Number: 4040-0001
Expiration Date: 12/31/2022

1. Are Human Subjects Involved?

☐ Yes ☒ No

1.a. If YES to Human Subjects

Is the Project Exempt from Federal regulations? ☐ Yes ☐ No

If yes, check appropriate exemption number. ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

If no, is the IRB review Pending? ☐ Yes ☐ No

IRB Approval Date:

Human Subject Assurance Number:

2. Are Vertebrate Animals Used?

☐ Yes ☒ No

2.a. If YES to Vertebrate Animals

Is the IACUC review Pending? ☐ Yes ☐ No

IACUC Approval Date:

Animal Welfare Assurance Number:

3. Is proprietary/privileged information included in the application?

☐ Yes ☒ No

4.a. Does this Project Have an Actual or Potential Impact - positive or negative - on the environment?

☐ Yes ☒ No

4.b. If yes, please explain:

4.c. If this project has an actual or potential impact on the environment, has an exemption been authorized or an environmental assessment (EA) or environmental impact statement (EIS) been performed?

☐ Yes ☐ No

4.d. If yes, please explain:

5. Is the research performance site designated, or eligible to be designated, as a historic place?

☐ Yes ☒ No

5.a. If yes, please explain:

6. Does this project involve activities outside of the United States or partnerships with international collaborators?

☐ Yes ☒ No

6.a. If yes, identify countries:

6.b. Optional Explanation:

7. Project Summary/Abstract

Add Attachment

Delete Attachment

View Attachment

8. Project Narrative

Add Attachment

Delete Attachment

View Attachment

9. Bibliography & References Cited

Add Attachment

Delete Attachment

View Attachment

10. Facilities & Other Resources

Add Attachment

Delete Attachment

View Attachment

11. Equipment

Add Attachment

Delete Attachment

View Attachment

12. Other Attachments

Add Attachments

Delete Attachments

View Attachments

☐

Summary

Approximately 36% of U.S. adults possess basic or below-basic health literacy, which is linked to adverse health outcomes such as increased hospitalizations and higher mortality rates among seniors. In electronic health systems, around 25% of adults exhibit low electronic health literacy (eHL), making them less likely to perceive web-based patient portals as useful and limiting their engagement with digital health resources. Simplifying patient portals is crucial to improve accessibility and usability, particularly for individuals with low health literacy.

The primary objective of CapRx is to develop and integrate a generative AI system that automatically captions and interprets data visualizations while providing tailored, interactive chatbot-mediated advice within patient portals. Additionally, we aim to ensure seamless integration with Electronic Health Records (EHRs) and conduct user-centric design and usability testing to enhance portal usability and engagement, fostering more confident and informed healthcare decision-making.

We will incorporate Med-PaLM, a generative AI model from Google Research designed for medical use, into web-based patient portals to automatically caption and interpret data visualizations. Leveraging patient-specific data from Electronic Health Records (EHRs), the AI-driven chatbot will deliver personalized health plans and coaching, enhancing data transparency and patient engagement. An iterative UI/UX design process, including usability testing with diverse patient groups, will refine the interface to ensure accessibility, while robust data security measures will safeguard patient information and ensure HIPAA compliance. Post-implementation, we will evaluate the system's effectiveness by measuring patient health outcomes, surveying perceived usefulness through patient feedback, and monitoring portal usage rates to quantify increases in engagement and satisfaction.

CapRx is anticipated to significantly improve patients' comprehension of their lab results, health trends, and care plans through automated captions and an interactive chatbot, targeting a 50% increase in patient engagement and a 50% improvement in perceived usefulness scores based on post-implementation surveys. Additionally, the personalized health plans and coaching facilitated by the chatbot are projected to enhance patient satisfaction and empower more informed healthcare decision-making, ultimately contributing to better health outcomes.

CapRx targets the \$3.7 billion patient portal market, which is projected to grow at a 17% compound annual growth rate through 2030. We will commercialize our solution through a subscription-based model, supplemented by premium feature and service offerings on a per-use basis, enabling scalable revenue growth and broad adoption across healthcare providers seeking to enhance patient engagement and data interpretation.

Ultimately, this project will transform patient portals into more accessible and empowering tools, significantly enhancing patient engagement and informed healthcare decision-making.

Narrative

Low electronic health literacy (eHL) significantly impedes patients' ability to effectively utilize web-based patient portals, resulting in decreased engagement and suboptimal health outcomes. CapRx aims to address this challenge by integrating Med-PaLM, a generative AI model developed by Google Research for medical applications, into patient portals to automatically caption and interpret data visualizations. By leveraging patient-specific data from Electronic Health Records (EHRs), the AI-driven chatbot will deliver personalized health plans and coaching, enhancing data transparency and patient engagement. Successful implementation of this project will not only increase portal usage and perceived usefulness among patients with varying levels of eHL but also empower them to make more informed healthcare decisions, thereby improving overall health outcomes.

References Cited

National Center for Education Statistics. National Assessment of Adult Literacy (NAAL) - Health Literacy - Highlights of findings. n.d. URL: https://nces.ed.gov/naal/health_results.asp.

Deshpande N, Arora VM, Vollbrecht H, Meltzer DO, Press V. EHealth Literacy and Patient Portal Use and Attitudes: Cross-sectional observational study. JMIR Human Factors 2022;10:e40105. <https://doi.org/10.2196/40105>.

Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K. Low Health Literacy and Health Outcomes: An Updated Systematic Review. Annals of Internal Medicine 2011;155:97. <https://doi.org/10.7326/0003-4819-155-2-201107190-00005>.

Med-PALM: a Medical large language model - Google Research. Med-PaLM: A Medical Large Language Model - Google Research. n.d. URL: <https://sites.research.google/med-palm/>.

Facilities & Other Resources

Our team operates from a fully equipped office space within The University of Iowa, providing a collaborative environment conducive to interdisciplinary work. We utilize Google Cloud Platform (GCP), specifically services like Google Kubernetes Engine and BigQuery, to host Med-PaLM and manage our AI-driven chatbot functionalities, ensuring scalability and reliability. High-performance workstations and dedicated servers are available for efficient AI model training and data processing. Robust cybersecurity measures, including firewalls and encryption protocols, are in place to protect sensitive patient information and ensure HIPAA compliance. Our partnerships with the University of Iowa provide access to diverse patient populations for usability testing and feedback, further enhancing the project's effectiveness.

Equipment

CapRx is supported by a range of specialized equipment essential for the development, testing, and deployment of our generative AI solution. Our high-performance development workstations are equipped with advanced CPUs, GPUs, and ample RAM to facilitate efficient AI model training and data processing. Dedicated servers hosted on Google Cloud Platform enable the deployment of Med-PaLM and manage real-time data processing and chatbot interactions. Tools like UserTesting and Lookback are used for conducting and recording usability tests with diverse patient groups. Advanced encryption software and secure storage devices protect patient data, and our network security hardware, including firewalls and intrusion detection systems, safeguards our internal network from unauthorized access and cyber threats.

Project/Performance Site Location(s)**Project/Performance Site Primary Location**

☐ I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name: The Informaticists

DUNS Number:

* Street1: 20 East Washington Street

Street2:

* City: Iowa City

County: Johnson

* State: Iowa

Province:

* Country: USA: UNITED STATES

* ZIP / Postal Code: 52240

* Project/ Performance Site Congressional District:

IA-02

RESEARCH & RELATED Senior/Key Person Profile (Expanded)

PROFILE - Project Director/Principal Investigator			
Prefix:	<input type="text"/>	* First Name: <input type="text" value="Zak"/>	Middle Name: <input type="text" value="Joseph"/>
* Last Name:	<input type="text" value="Gilliam"/>		Suffix: <input type="text"/>
Position/Title:	<input type="text" value="Senior Researcher and Developer"/>	Department:	<input type="text" value="Department of Informatics/
Psychological and Brain Sciences"/>
Organization Name:	<input type="text" value="University of Iowa"/>		Division: <input type="text"/>
* Street1:	<input type="text" value="200 Hawkins Drive"/>		
Street2:	<input type="text"/>		
* City:	<input type="text" value="Iowa City"/>	County/ Parish:	<input type="text" value="Johnson"/>
* State:	<input type="text" value="Iowa"/>	Province:	<input type="text"/>
* Country:	<input type="text" value="USA: UNITED STATES"/>		* Zip / Postal Code: <input type="text" value="52245"/>
* Phone Number:	<input type="text" value="123-456-7890"/>	Fax Number:	<input type="text"/>
* E-Mail:	<input type="text" value="zjgilliam@uiowa.edu"/>		
Credential, e.g., agency login:	<input type="text"/>		
* Project Role:	<input type="text" value="PD/PI PI"/>	Other Project Role Category:	<input type="text"/>
Degree Type:	<input type="text" value="Bachelors"/>		
Degree Year:	<input type="text" value="2024"/>		
* Attach Biographical Sketch	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
Attach Current & Pending Support	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>

PROFILE - Senior/Key Person 1			
Prefix:	<input type="text"/>	* First Name: <input type="text" value="Zak"/>	Middle Name: <input type="text" value="Joseph"/>
* Last Name:	<input type="text" value="Gilliam"/>		Suffix: <input type="text"/>
Position/Title:	<input type="text" value="Senior Researcher and Developer"/>	Department:	<input type="text" value="Department of Informatics/
Psychological and Brain Sciences"/>
Organization Name:	<input type="text" value="University of Iowa"/>		Division: <input type="text"/>
* Street1:	<input type="text" value="200 Hawkins Drive"/>		
Street2:	<input type="text"/>		
* City:	<input type="text" value="Iowa City"/>	County/ Parish:	<input type="text" value="Johnson"/>
* State:	<input type="text" value="Iowa"/>	Province:	<input type="text"/>
* Country:	<input type="text" value="USA: UNITED STATES"/>		* Zip / Postal Code: <input type="text" value="52245"/>
* Phone Number:	<input type="text" value="123-456-7890"/>	Fax Number:	<input type="text"/>
* E-Mail:	<input type="text" value="zjgilliam@uiowa.edu"/>		
Credential, e.g., agency login:	<input type="text"/>		
* Project Role:	<input type="text" value="PI/Lead Developer"/>	Other Project Role Category:	<input type="text"/>
Degree Type:	<input type="text" value="Bachelors in Science"/>		
Degree Year:	<input type="text" value="2024"/>		
Attach Biographical Sketch	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
Attach Current & Pending Support	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>

Delete Entry

Next Person

To ensure proper performance of this form; after adding 20 additional Senior/ Key Persons; please save your application, close the Adobe Reader, and reopen it.

RESEARCH & RELATED Senior/Key Person Profile (Expanded)

PROFILE - Project Director/Principal Investigator			
Prefix:	<input type="text"/>	* First Name: <input type="text" value="Dr. James"/>	Middle Name: <input type="text"/>
* Last Name:	<input type="text" value="Blum"/>		Suffix: <input type="text"/>
Position/Title:	<input type="text" value="Chief Health Information Officer"/>	Department:	<input type="text" value="UIHC - Pediatrics"/>
Organization Name:	<input type="text" value="UIHC"/>		Division: <input type="text"/>
* Street1:	<input type="text" value="200 Hawkins Drive"/>		
Street2:	<input type="text"/>		
* City:	<input type="text" value="Iowa City"/>	County/ Parish:	<input type="text" value="Johnson"/>
* State:	<input type="text" value="Iowa"/>	Province:	<input type="text"/>
* Country:	<input type="text" value="USA: UNITED STATES"/>		* Zip / Postal Code: <input type="text" value="52245"/>
* Phone Number:	<input type="text" value="1234567893"/>	Fax Number:	<input type="text"/>
* E-Mail:	<input type="text" value="dj-blum@uiowa.edu"/>		
Credential, e.g., agency login: <input type="text"/>			
* Project Role:	<input type="text" value="PD/PI pD"/>	Other Project Role Category: <input type="text"/>	
Degree Type:	<input type="text" value="Doctorate in Medicine"/>		
Degree Year:	<input type="text" value="1800"/>		
* Attach Biographical Sketch	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
Attach Current & Pending Support	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>

PROFILE - Senior/Key Person 1			
Prefix:	<input type="text"/>	* First Name: <input type="text" value="Elijah"/>	Middle Name: <input type="text"/>
* Last Name:	<input type="text" value="Chow"/>		Suffix: <input type="text"/>
Position/Title:	<input type="text" value="Undergraduate Researcher"/>	Department:	<input type="text" value="Informatics"/>
Organization Name:	<input type="text" value="The Informaticists"/>		Division: <input type="text"/>
* Street1:	<input type="text" value="12 S Gilbert Street"/>		
Street2:	<input type="text"/>		
* City:	<input type="text" value="Iowa City"/>	County/ Parish:	<input type="text"/>
* State:	<input type="text" value="IA"/>	Province:	<input type="text"/>
* Country:	<input type="text" value="USA: UNITED STATES"/>		* Zip / Postal Code: <input type="text" value="52240"/>
* Phone Number:	<input type="text" value="515-360-9922"/>	Fax Number:	<input type="text"/>
* E-Mail:	<input type="text" value="Ejchow@uiowa.edu"/>		
Credential, e.g., agency login: <input type="text"/>			
* Project Role:	<input type="text" value="Marketing Lead"/>	Other Project Role Category: <input type="text"/>	
Degree Type:	<input type="text" value="Bachelors of Science (in progress)"/>		
Degree Year:	<input type="text" value="Expected 2026"/>		
Attach Biographical Sketch	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
Attach Current & Pending Support	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>

To ensure proper performance of this form; after adding 20 additional Senior/ Key Persons; please save your application, close the Adobe Reader, and reopen it.

RESEARCH & RELATED Senior/Key Person Profile (Expanded)

PROFILE - Project Director/Principal Investigator				
Prefix:	<input type="text" value="Dr."/>	* First Name:	<input type="text" value="James"/>	
		Middle Name:	<input type="text"/>	
* Last Name:	<input type="text" value="Blum"/>	Suffix:	<input type="text"/>	
Position/Title:	<input type="text" value="Chief Health Information Officer"/>	Department:	<input type="text" value="Anesthesia"/>	
Organization Name:	<input type="text" value="University of Iowa Hospitals & Clinics"/>		Division:	<input type="text"/>
* Street1:	<input type="text" value="200 Hawkins Drive"/>			
Street2:	<input type="text"/>			
* City:	<input type="text" value="Iowa City"/>	County/ Parish:	<input type="text" value="Johnson"/>	
* State:	<input type="text" value="Iowa"/>	Province:	<input type="text"/>	
* Country:	<input type="text" value="USA: UNITED STATES"/>	* Zip / Postal Code:	<input type="text" value="52240"/>	
* Phone Number:	<input type="text" value="1-800-777-8442"/>	Fax Number:	<input type="text"/>	
* E-Mail:	<input type="text" value="James-Blum@uiowa.edu"/>			
Credential, e.g., agency login: <input type="text"/>				
* Project Role:	<input type="text" value="PD/PI"/>	Other Project Role Category:	<input type="text"/>	
Degree Type:	<input type="text" value="MD"/>			
Degree Year:	<input type="text"/>			
* Attach Biographical Sketch	<input type="text"/>	Add Attachment	Delete Attachment	View Attachment
Attach Current & Pending Support	<input type="text"/>	Add Attachment	Delete Attachment	View Attachment

PROFILE - Senior/Key Person 1				
Prefix:	<input type="text"/>	* First Name:	<input type="text" value="Michael"/>	
		Middle Name:	<input type="text"/>	
* Last Name:	<input type="text" value="Wurth"/>	Suffix:	<input type="text"/>	
Position/Title:	<input type="text" value="Graduate Student"/>	Department:	<input type="text" value="Informatics"/>	
Organization Name:	<input type="text" value="University of Iowa Graduate College"/>		Division:	<input type="text"/>
* Street1:	<input type="text" value="2 W Washington Street"/>			
Street2:	<input type="text"/>			
* City:	<input type="text" value="Iowa City"/>	County/ Parish:	<input type="text" value="Johnson"/>	
* State:	<input type="text" value="Iowa"/>	Province:	<input type="text"/>	
* Country:	<input type="text" value="USA: UNITED STATES"/>	* Zip / Postal Code:	<input type="text" value="52240"/>	
* Phone Number:	<input type="text" value="319-471-1096"/>	Fax Number:	<input type="text"/>	
* E-Mail:	<input type="text" value="mike-wurth@uiowa.edu"/>			
Credential, e.g., agency login: <input type="text"/>				
* Project Role:	<input type="text" value="Project Manager"/>	Other Project Role Category:	<input type="text"/>	
Degree Type:	<input type="text" value="Bachelors, Masters"/>			
Degree Year:	<input type="text" value="2020, 2024"/>			
Attach Biographical Sketch	<input type="text"/>	Add Attachment	Delete Attachment	View Attachment
Attach Current & Pending Support	<input type="text"/>	Add Attachment	Delete Attachment	View Attachment

Delete Entry

Next Person

To ensure proper performance of this form; after adding 20 additional Senior/ Key Persons; please save your application, close the Adobe Reader, and reopen it.

PROFILE - Senior/Key Person 1

Prefix:		* First Name:	Haleigh	Middle Name:	Ann
* Last Name:	Allyn	Suffix:			
Position/Title:	Graduate Student	Department:	Informatics		
Organization Name:	University of Iowa Graduate College	Division:			
* Street1:	2 W Washington Street				
Street2:					
* City:	Iowa City	County/ Parish:	Johnson		
* State:	Iowa	Province:			
* Country:	USA: UNITED STATES	* Zip / Postal Code:	52240		
* Phone Number:	712-539-8768	Fax Number:			
* E-Mail:	haleigh-allyn@uiowa.edu				
Credential, e.g., agency login:					
* Project Role:	Project Manager	Other Project Role Category:			
Degree Type:	Bachelors, Masters				
Degree Year:	2020, 2024				
Attach Biographical Sketch		Add Attachment	Delete Attachment	View Attachment	
Attach Current & Pending Support		Add Attachment	Delete Attachment	View Attachment	

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Blum, James

eRA COMMONS USER NAME (credential, e.g., agency login): [REDACTED]

POSITION TITLE: Chief Health Information Officer

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Alma College	BS	1998	Computer Science
Johns Hopkins University School of Medicine	MD	2003	Medicine
University of Michigan	Residency	2007	Anesthesiology
University of Michigan	Fellowship	2008	Critical Care Medicine

A. Personal Statement

Dr. James Blum is uniquely qualified to lead this project, bringing extensive expertise at the intersection of clinical care, health informatics, and technology innovation. With over a decade of leadership experience in critical care, anesthesiology, and informatics, Dr. Blum has demonstrated the ability to translate emerging technologies into practical solutions for healthcare challenges.

As Chief Health Information Officer at the University of Iowa, Dr. Blum has spearheaded initiatives that integrate advanced data analytics and machine learning into clinical workflows, improving patient outcomes and operational efficiency. His academic contributions include peer-reviewed research on applying artificial intelligence to reduce provider burnout, enhance clinical decision support systems, and optimize data accessibility in electronic health records (EHR). These achievements illustrate his capacity to lead multidisciplinary teams and deliver transformative technologies in complex healthcare environments.

Dr. Blum's certifications in Clinical Informatics, Critical Care Medicine, and Anesthesiology, combined with his leadership roles at major academic medical centers and Veterans Affairs facilities, further underscore his readiness to oversee this project. His track record of successful collaborations between clinicians, engineers, and data scientists positions him to navigate the technical and clinical complexities of implementing generative AI-driven solutions in patient portals.

B. Positions, Scientific Appointments, and Honors

Positions and Employment

2010 – 2011 University of Michigan Medical School Interim Director, Division of Critical Care Medicine, Department of Anesthesiology

2010 – 2012 University of Michigan Medical School Interim Director, Cardiovascular Intensive Care Unit

2008 – 2014 University of Michigan Medical School Associate Director, Critical Care Fellowship – Anesthesiology

2012 – 2014 University of Michigan Medical School Associate Director, Cardiovascular Intensive Care Unit

2013 – 2014 University of Michigan Medical School Director, Ann Arbor Veterans Affairs Surgical Trauma Intensive Care Unit

2014 – 2016 Emory University School of Medicine Chief, Critical Care Anesthesiology and Surgical Specialties Anesthesiology

2014 – 2019 Emory University School of Medicine Chief of Critical Care Anesthesiology

2019 – 2020 Emory University School of Medicine Vice Chair for Technology and Innovation

2016 – 2019 Atlanta Veterans Affairs Medical Center Chief of Anesthesiology

2019 – 2020 Atlanta Veterans Affairs Medical Center Technical Director Veterans Health Administration Clinical Informatics and Data Management Office – Data Management & Analytics

2020 –
Present University of Iowa Chief Health Information Officer

Other Experience and Professional Memberships

American Board of Anesthesiology – Certified in Anesthesiology

American Board of Anesthesiology – Certified in Critical Care Medicine

American Board of Preventive Medicine – Certified in Clinical Informatics

Michigan State Medical License – Active through 2026

Iowa State Medical License – Active through 2025

Georgia State Medical License – Active through 2025

American Society of Anesthesiologists

Society of Critical Care Medicine

Society of Critical Care Anesthesiologists

American Medical Informatics Association

Institute of Electrical and Electronics Engineers

Honors

- 2004 Internal Medicine Intern of the Year
- 2006 Poster Travel Award
- 2010 Best Project Proposal
- 2011 Kosaka Award for Best Clinical Research
- 2012 Best Pulmonary Abstract

C. Contributions to Science

- Mlsurac, J., Knake, L. A. & **Blum, J. M.** (2024). [The effect of ambient artificial intelligence notes on provider burnout](#). *Appl Clin Inform*. DOI: [10.1055/a-2461-4576](#). PMID: 39500346.
- Knake, L. A., Asbury, R., Penisten, S., Meyer, N., Burrell, K., Chuffo Davila, R., Wright, A. & **Blum, J. M.** (2024). [Successfully transitioning an interruptive alert into a noninterruptive alert for central line dressing changes in the Neonatal Intensive Care Unit](#). *Appl Clin Inform* 15 (5) 965-969. DOI: [10.1055/a-2394-4462](#). PMID: 39163999. PMCID: PMC11560397 (available on 2025-11-13).
- Dornbush, C., Mishra, A., Hrabe, J., Guyton, K., Axelrod, D., **Blum, J.** & Gribovskaja-Rupp, I. (2024). [Remote monitoring after elective colorectal surgery, a pilot study](#). *Surgery*. DOI: [10.1016/j.surg.2024.08.025](#). PMID: 39307673.
- Musurac, J., Knake, L. A. & **Blum, J. M.** (2024). [Impact of ambient artificial intelligence notes on provider burnout](#). *medRxiv*. DOI: [10.1101/2024.07.18.24310656](#).
- Cramer, E., Kuperman, E., Meyer, N. & **Blum, J. M.** (2024). [Improving naloxone co-prescribing through clinical decision support](#). *Cureus* 16 (7) e63919. DOI: [10.7759/cureus.63919](#). PMID: 39099893. PMCID: PMC11298243.
- Lilly, C. M., Kirk, D., Pessach, I. M., Lotun, G., Chen, O., Lipsky, A., Lieder, I., Celniker, G., Cucchi, E. W. & **Blum, J. M.** (2024). [Application of machine learning models to biomedical and information system signals from critically ill adults](#). *Chest* 165 (5) 1139-1148. DOI: [10.1016/j.chest.2023.10.036](#). PMID: 37923292.
- Wood, K. E., Pham, H. T., Carter, K. D., Nepple, K. G., **Blum, J. M.** & Krasowski, M. D. (2023). [Impact of a switch to immediate release on the patient viewing of diagnostic test results in an online portal at an academic medical center](#). *J Pathol Inform* 14 100323. DOI: [10.1016/j.jpi.2023.100323](#). PMID: 37520309. PMCID: PMC10384271.
- **Blum, J. M.** & Kuehn, D. M. (2022). [Collaborative artificial intelligence in practice: the next steps](#). *Anesthesiology* 137 (6) 664-665. DOI: [10.1097/ALN.0000000000004412](#). PMID: 36413783.
- Jackson, B. R., Gold, J. A. W., Natarajan, P., Rossow, J., Neblett Fanfair, R., da Silva, J., Wong, K. K., Browning, S. D., Bamrah Morris, S., Rogers-Brown, J., Hernandez-Romieu, A. C., Szablewski, C. M., Oosmanally, N., Tobin-D'Angelo, M., Drenzek, C., Murphy, D. J., Hollberg, J., **Blum, J. M.**, Jansen, R., Wright, D. W., Sewell, W. M., Owens, J. D., Lefkove, B., Brown, F. W., Burton, D. C., Uyeki, T. M., Bialek, S. R., Patel, P. R. & Bruce, B. B. (2021). [Predictors at admission of mechanical ventilation and death in an observational cohort of adults hospitalized with coronavirus disease 2019](#). *Clin Infect Dis* 73 (11) e4141-e4151. DOI: [10.1093/cid/ciaa1459](#). PMID: 32971532. PMCID: PMC7543323.

B.300 R&R Budget Form

Sunday, November 17, 2024 5:54 PM

[B.300 R&R Budget Form.pdf](#)

RESEARCH & RELATED BUDGET - Budget Period 1

OMB Number: 4040-0001
Expiration Date: 12/31/2022

ORGANIZATIONAL DUNS: 000000000 Enter name of Organization: CapRX

Budget Type: ☒ Project ☐ Subaward/Consortium Budget Period: 1 Start Date: 01/01/2025 End Date: 12/31/2025

A. Senior/Key Person

Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Months			Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
						Cal.	Acad.	Sum.			
	Zak		Gilliam		\$120,000	3			\$30,000	\$7,500	\$37,500
Project Role: PD/PI											

Additional Senior Key Persons: Additional Key Persons at bottom of document

Total Funds requested for all Senior Key Persons in the attached file \$100,002

Total Senior/Key Person 4

B. Other Personnel

Number of Personnel	Project Role	Months			Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)	
		Cal.	Acad.	Sum.				
<input type="text"/>	Post Doctoral Associates	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
<input type="text"/>	Graduate Students	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
<input type="text"/>	Undergraduate Students	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
<input type="text"/>	Secretarial/Clerical	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
<input type="text"/>		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
0	Total Number Other Personnel						Total Other Personnel	0

Total Salary, Wages and Fringe Benefits (A+B) \$100,002

C. Equipment Description

List items and dollar amount for each item exceeding \$5,000

Equipment item	Funds Requested (\$)
High-Performance Computing Unit	\$6,500

Additional Equipment: Cloud Storage Server Setup

Total funds requested for all equipment listed in the attached file \$5,500

Total Equipment \$12,000

D. Travel

	Funds Requested (\$)
1. Domestic Travel Costs (Incl. Canada, Mexico and U.S. Possessions)	\$2,500
2. Foreign Travel Costs	
Total Travel Cost	\$2,500

E. Participant/Trainee Support Costs

	Funds Requested (\$)
1. Tuition/Fees/Health Insurance	
2. Stipends	
3. Travel	
4. Subsistence	
5. Other	
<input type="text"/> Number of Participants/Trainees	
Total Participant/Trainee Support Costs	\$0

F. Other Direct Costs			Funds Requested (\$)
1. Materials and Supplies			\$4,000
2. Publication Costs			\$1,500
3. Consultant Services			\$5,000
4. ADP/Computer Services			\$2,500
5. Subawards/Consortium/Contractual Costs			
6. Equipment or Facility Rental/User Fees			\$3,000
7. Alterations and Renovations			
8. Patient Compensation			\$5,000
9.			
10.			
Total Other Direct Costs			\$21,000
G. Direct Costs			Funds Requested (\$)
Total Direct Costs (A thru F)			\$135,502
H. Indirect Costs			
Indirect Cost Type	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
Overhead or Facilities & Administration	50%	\$156,336	\$78,168
Total Indirect Costs			\$78,168
Cognizant Federal Agency			
(Agency Name, POC Name, and POC Phone Number)			
Department of Health and Human Services, John Smith, 123-456-789			
I. Total Direct and Indirect Costs			Funds Requested (\$)
Total Direct and Indirect Institutional Costs (G + H)			\$213,670
J. Fee			Funds Requested (\$)
K. Total Costs and Fee			Funds Requested (\$)
Total Costs and Fee (I + J)			\$213,670
L. Budget Justification			
(Only attach one file.)			
Document explaining roles and effort			
Add Attachment			
Delete Attachment			
View Attachment			

RESEARCH & RELATED BUDGET - Cumulative Budget

Totals (\$)	
Section A, Senior/Key Person	\$100,002
Section B, Other Personnel	\$0
Total Number Other Personnel	0
Total Salary, Wages and Fringe Benefits (A+B)	\$100,002
Section C, Equipment	\$12,000
Section D, Travel	\$2,500
1. Domestic	\$2,500
2. Foreign	
Section E, Participant/Trainee Support Costs	

1. Tuition/Fees/Health Insurance		\$0
2. Stipends		
3. Travel		
4. Subsistence		
5. Other		
6. Number of Participants/Trainees		
Section F, Other Direct Costs		\$21,000
1. Materials and Supplies	\$4,000	
2. Publication Costs	\$1,500	
3. Consultant Services	\$5,000	
4. ADP/Computer Services	\$2,500	
5. Subawards/Consortium/Contractual Costs		
6. Equipment or Facility Rental/User Fees	\$3,000	
7. Alterations and Renovations		
8. Other 1	\$5,000	
9. Other 2		
10. Other 3		
Section G, Direct Costs (A thru F)		\$135,502
Section H, Indirect Costs		\$78,168
Section I, Total Direct and Indirect Costs (G + H)		\$213,670
Section J, Fee		
Section K, Total Costs and Fee (I + J)		\$213,670

Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Months			Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
						Cal.	Acad.	Sum.			
	Eli		Chow		\$100,000	2			\$16,667	\$4,167	\$20,834

Project Role: FD/PI Informatics Specialist

Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Months			Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
						Cal.	Acad.	Sum.			
	Mike		Wurth		\$100,000	2			\$16,667	\$4,167	\$20,834

Project Role: FD/PI QA

Prefix	First	Middle	Last	Suffix	Base Salary (\$)	Months			Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
						Cal.	Acad.	Sum.			
	Haleigh		Allyn		\$100,000	2			\$16,667	\$4,167	\$20,834

Project Role: FD/PI Marketing Specialists

B.400 PHS 398 Research Plan Form

Sunday, November 17, 2024 5:55 PM

B.400 PHS
398 Research

PHS 398 Research Plan

OMB Number: 0925-0001
Expiration Date: 2/28/2023

Introduction			
1. Introduction to Application (for Resubmission and Revision applications)	Description of GenRX	Add Attachment	Delete Attachment View Attachment
Research Plan Section			
2. Specific Aims	GenRX project and Objectives	Add Attachment	Delete Attachment View Attachment
3. *Research Strategy	GenRX Ai development plan	Add Attachment	Delete Attachment View Attachment
4. Progress Report Publication List		Add Attachment	Delete Attachment View Attachment
Other Research Plan Section			
5. Vertebrate Animals		Add Attachment	Delete Attachment View Attachment
6. Select Agent Research		Add Attachment	Delete Attachment View Attachment
7. Multiple PD/PI Leadership Plan	Description of leadership roles	Add Attachment	Delete Attachment View Attachment
8. Consortium/Contractual Arrangements	Details of collaboration	Add Attachment	Delete Attachment View Attachment
9. Letters of Support	Letters from collaborators	Add Attachment	Delete Attachment View Attachment
10. Resource Sharing Plan(s)	Plan for sharing data and	Add Attachment	Delete Attachment View Attachment
11. Authentication of Key Biological and/or Chemical Resources	resources	Add Attachment	Delete Attachment View Attachment
Appendix			
12. Appendix	Add Attachments Delete Attachments View Attachments		
Description of supplementary materials			

Introduction to Application:

- Description:** "An overview of the GenRx project, highlighting its goals, significance, and innovation."

Specific Aims:

- Description:** "A concise outline of the objectives for the GenRx project, including improving patient understanding through AI-generated captions and enhancing healthcare communication."

Research Strategy:

- Description:** "A detailed plan describing the methodologies for data preparation, AI development, and integration into patient portals, including compliance strategies and testing protocols."

Multiple PD/PI Leadership Plan:

- Description:** "A description of the leadership roles and collaboration plan among the project directors and key personnel."

Consortium/Contractual Arrangements:

- Description:** "Details of any collaborations with external organizations, including their roles and budgetary contributions."

Letters of Support:

- Description:** "Letters from stakeholders, healthcare providers, or academic collaborators endorsing the project."

Resource Sharing Plan(s):

- **Description:** "A plan for sharing data and resources, such as anonymized datasets or AI model frameworks, with the broader research community."

Appendix:

- **Description:** "Supplementary materials, including figures, diagrams, or expanded methodological details supporting the proposal."

B.440 SBIR/STTR Information Form COMPLETED AT THE BOTTOM

Sunday, November 17, 2024 5:55 PM

B.440
SBIR.STTR

SBIR/STTR Information

OMB Number: 4040-0001
Expiration Date: 10/31/2019

* Agency to which you are applying (select only one)

☐ DOE ☒ HHS ☐ USDA ☐ Other: * SBC Control ID: (This 9 digit code is obtained from the Small Business Administration)

* Program Type (select only one)

☒ SBIR ☐ STTR
☐ Both (See agency-specific instructions to determine whether a particular agency allows a single submission for both SBIR and STTR)

* Application Type (select only one)

☒ Phase I ☐ Phase II ☐ Fast-Track ☐ Direct Phase II ☐ Phase IIA ☐ Phase IIB
☐ Commercialization Readiness Program (See agency-specific instructions to determine application type participation)Phase I Letter of Intent Number: * Agency Topic/Subtopic:

Questions 1-7 must be completed by all SBIR and STTR Applicants:

<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	* 1a. Do you certify that at the time of award your organization will meet the eligibility criteria for a small business as defined in the funding opportunity announcement?
4	* 1b. Anticipated Number of personnel to be employed at your organization at the time of award. <input type="text"/>
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	* 1c. Is your small business majority owned by venture capital operating companies, hedge funds, or private equity firms?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	* 1d. Is your small business a Faculty or Student-Owned entity?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	* 2. Does this application include subcontracts with Federal laboratories or any other Federal Government agencies? * If yes, insert the names of the Federal laboratories/agencies: <input type="text"/>
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	* 3. Are you located in a HUBZone? To find out if your business is in a HUBZone, use the mapping utility provided by the Small Business Administration at its web site: http://www.sba.gov
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	* 4. Will all research and development on the project be performed in its entirety in the United States? If no, provide an explanation in an attached file. * Explanation: <input type="text"/> <input type="button" value="Add Attachment"/> <input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	* 5. Has the applicant and/or Program Director/Principal Investigator submitted proposals for essentially equivalent work under other Federal program solicitations or received other Federal awards for essentially equivalent work? * If yes, insert the names of the other Federal agencies: <input type="text"/>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	* 6. Disclosure Permission Statement: If this application does not result in an award, is the Government permitted to disclose the title of your proposed project, and the name, address, telephone number and email address of the official signing for the applicant organization to state-level economic development organizations that may be interested in contacting you for further information (e.g., possible collaborations, investment)?
	* 7. Commercialization Plan: The following applications require a Commercialization Plan: Phase I (DOE only), Phase II (all agencies), Phase III Fast-Track (all agencies). Include a Commercialization Plan in accordance with the agency announcement and/or agency-specific instructions. * Attach File: <input type="text" value="Description of how we will scale and market the product"/> <input type="button" value="Add Attachment"/> <input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>

[SBIRInfo.pdf](#)