

**UMSAEP AWARD REPORT**

**Visit to**

**Missouri, St Louis, USA**

**From**

**1 September 2022 to 31 September 2022**

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"#\$!%&'(!)\*#+)!,-./! !

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01!2,-\*(!(+'.3&-\*!435+,13!64!75.8-!9':,;2,& !

!

<,-&3;,13!(!>='&3!7,.&,-38'1!-1+!?!@,&.84,!>.8,1.,! !

A-.5\*3#!(!B';;5183#!-1+!C,-\*3/!>.8,1.,4! !

D18:,&483#!(!3/,!E,43,&1!B-=!

!

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**UMSL Host\$!%&'(!C-8#-1!B-8!**

<,-&3;,13!(! 6-3/,-38.4!-3!3/,! !

D18:,&483#!(!6844'5&8!F!>3G!)'584!

# 1. Overview

H/,!8483!3!D6>)!-4!51+,&3-J,1!2#!64!75.8-!9':,;2,&!/'!84!-!+'3'&-\*!  
 435+,13!51+,&!;#!45=,&:848'1!-1+!3/,!'F45=,&:848'1!(!%&'(!B-8GH/,!=5&='4,!  
 '(!3/84!:8483!-4!.'14,K5,13!5='1!64!9':,;2,&!.';=\*381L!3/,!K5-1383-38:;!<br>
 +-3-!.'\*\*,.38'1!(!/,&!+'3'&-\*!4 35+8,4!81!>MN!-4!|,\*\*!-4!3/,short course on<br>
 B0<MHMF7<M!((,&,+!2#!3/,!>./''\*(!7,4,-&./!<-3-!>.8,1.,! -3!3/,!  
 D18:,&483#!'(!6844'5&8N!B'\*5;28-N!(&'!>,=3,;2,&!OPOQ!3'R51,IOP!3/3-!  
 4/,!'5\*+!,@=\*&,!3/,!54,!(! ;-3/,;-38.-\*N!43-38438.-\*!-1+!.';=53-38'1-\*!  
 4.8,1.,!81!3/,!(8,\*+!(! 4='&3!4.8,1.,!83!/!%&'(!B-8!-1+!.'\*\*,-L5,4! -3!3/,!  
 D18:,&483#!'(!6844'5&8!('&!-1-\*#481L!3/,!K5-1383-38:;!+-3-!81!,&!+'3'&-\*!436!#<br>
 A&!;#!:8483!3!3/,!D>MN!64!9':,;2,&!-4!/43,+!2#!%&'(!C-8#-1!B-8!-1+!/84!  
 .'\*\*,-L5,4!81!3/,! <,=-&3;,13!(!R'813!?'1L81,,&81LN!",13'1C-\*\*!-3!>3!)'584G!

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# 2. Description of Linkage Activities

<5,!3!&,.,13!3,./1\*'L8.-\*!811':-38'14 !81!;-3/,;-38.-\*N!43-38438.-\*!-1+!  
 .'!;=53-38'1-\*!4.8,1.,N!3/,&!/4!2,1!-!=-&38.5\*-&!81.&,-4,!81!4#43,;4!-1+!  
 +,;8.,4!3/3-!.'\*\*,.3!-1+!&=:8+!, =,&'&:-1.,!+-3- !81!3/,!(8,\*+!(!4='&3!4.8,1.,G!  
 H/,4,!811':-38'14!/-:!,2,1!,;2&-.,+!-1+!8+,\*#!-+!&=3,+!2#!&='(,448'1-\*!  
 4='&34!'&L-18S-38'14N!-1+!3/,!54,!(!4='&3!&='&'&:-1.,!+-3-!84!2&'!-+\*#!<br>
 .'148+,&,+!-4!-!&=3,138-\*!L-;, F./-1L,&!81!;-3./!-1-\*#484!-1+!4='&3!  
 =,&'&:-1.,G!C'!,:,&N!;-1#!'(!3/,4,!4#43,;4!-1+!-==\*8.-38'14!/-:,!1'3!  
 2,1!-==\*8,+!.';=&/,148:,\*#! 81!->'53!/M(&8.-1!.'13,@3N!-1+!\*,-:,4!,5!/3!  
 2,! \*,-&1,+!-1+! L-81,+!(&'!45./!-1!,@=,&8,1.,G!H/54N!3/,!=5&='4,!(!3/84!  
 --+;,8!.,@./-1L,!(!&!64!9':,;2,&!-4!3!,@=\*&,!3/,!&'\*,!(! !<br>
 ;-3/,;-38.-\*N!43-38438.-\*!-1+!.';=53-38'1-\*!811':-38'1!81!3/,!(8,\*+!(!4='&3!  
 4.8,1.,!(!&!,&!+'3'&-\*!435+#G!",\*!|-&,!4',!(!3/,! -.-+;,8!-1+!  
 ,+5.-38'1-\*! -38:838,4!3/3!64!9':,;2,&!-33,1+,-!-3!3/,!D6>)!+5&81L!/,&!<br>
 :8483G!

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## 2.1 UMSL

- ! 64!9':,;2,&!;3! !83!/!%&'(!C-8#-1!B-8N!M44'.8-3!<,-1!(!R'813!  
 ?1L81,,&81L!-3!D6>)!-1+!L-81,+!81:-\*5-2\*,!81('&:-38'1!-1+!  
 J1!'\*,+L, !&,L-&+81L!/,&!43-38438.-\*!+-3-!-1-\*#484G!

!''#\$%&'&'%'%

%

- ! %&'(!B-8!-44843,+!/,&!81!51+,&43-1+81L!1,!3,./18K54!-1+!  
 -==&'-. /,4!3!'.!';=53-38'1-\*! + -3- !-1-\*#484!-1+! =,&4'1-\*!. -=-.83#F!  
 258\*+81LG
- ! T1!3/84!&,L-&+N!64!9':,;2,&!-4!-2\*,!3!2,L81!!&J81L!'1!1,!'(!3/,!  
 ; -154.&8=34!81!/,&!+'.'3!&-\*!435+#('!&!452;8448'1!3!'-! =, &F&, :8,!,+!  
 -1+!-..&, +83,+!U'5&1-\*G!H/,!;-154.&8=3!/-4!481.,!2,,!1!452;833,+!3!  
 A&'138,&4!(!&!&, :8,IG!

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## 2.2 North Carolina State University

- ! 64!9':,;2,&!-33,1+,+!- 1!'1\*81,!;,,381L!81!3/,!2,L81!'(!>,=3,;2,&!  
 OPOO!'1!>='&3!M1-\*#38.4!!83/!%&'(!?&81!>./\*8,=N!M44'.8-3,!%&'(,44'&N!  
 9B!>3-3,!D18:, &483#G!!

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## 2.3 Washington University, St Louis

- ! 64!9':,;2,&!-33,1+,+!  
 8-33,1+,+!EI&2./

,4=,.8-\*\*#N!!|2'3/! I'5\*+!\*8J,l3'!,@=&,44!'5&!481.,&,-==&,.8-38'1!-1+!3/-1J4!  
3!'D6 !-1+!DEB!('&! =&':8+81L!54!l83!/3/84!'== '&35183#!3!'\*,-&1!-1+!L&'l!-1+!  
258\*+'!5&!.-=.83#!-4!-.+;,8.4!-1+!&,4,-&./,&4 !('&!3/,!2,1,(83!'5&!435+,134N!  
+,-&3;,13!-1+!814383538!lG

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#### 4. Photo Material

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**Image 1. Computational analysis in R.**

**Image 2: Advanced computational imaging in R.**

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