

!"#\$%&'(")"*&+, '-))%+\$*."'/'0%1%2*'3#\$4"&)\$.15'6, \$+*7%' 889:; <=:=>9'/'<u>*?*&@AB2C+:</u>"@C'

LD	TT	\boldsymbol{c}	۱ ۲	Гī	Λ	A	1
ED	U	L.	1.	H	U	ľ	۱

Ph.D.

```
[$#*#+$*2'*$@'.%'%&7*#$[*.$%#)'., *."

L&%4$@"'2"7*2'*$@'.%'C#@%+CS"#."@'$$$$7&*#.)'*#@'&".C&#$#7'+$.$["#):"
!

E+9; 2)(3!E+*#2&.)#(-!)(!O##F!O#; (.$!
! (")"*&+, "&:'(")"*&+, '*+.$4$.$")'$#+2C@"'+*)"'&"+%&@'*#*21)$)5
```

```
")*)(3!0T+, +!&(9!<1+, +:6!")(F)(3!T#; -)(3!:(-.&I)%.$!.#!E+2)9)*)-=!G=#(3!6#=+(!! !
                                                                                                                                                                                                                                                                                                                           D < A = !
E+2+(.\%!E+\%*-+9!K,\#=!?\&)\%
                        -S"&$+*#'!%+$".1'%E'6&$S$#%2%71:'-.2*#.*5'P-:''
E+.;, ()(3!T#=+U!<1+!8+&()(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)(3!#5!T#;-)
                                                                                                                                                                                                                                                                                                                           D<A; '
                        -5''\$\$+*\#'!\%+\$\%2\%7\$+*2'-))\%+\$*.\$\%\#'-\#\#C*2'H''''.\$\#7:'6,\ \$+*7\%5'00:'
<1+!H,#=)-+-!&(9!H#--)I)%).)+-!#5!E++(.,$@6#=+(!E+.;,()(3!5,#=!?&)%!
                                                                                                                                                                                                                                                                                                                           D<A; !
                        0*?'*#@'!%+$".1'-))%+$*.$%#'-##C*2'H"".$#7:'!"*..2"5'F-'
H_{1}^{2}...)(3!).!G\(\mathbb{M}\)R\(\&2F\)!<\(\#3+.1+,\(\alpha\)T\(\#N\)!K+=\(\&\mathbb{M}\)!M55+(9+,-\(\!8\)\(\&3+\!?\&\)\(\mathbb{M}\)E++(.,\(\$'\)
                                                                                                                                                                                                                                                                                                                           D<Ae'
                       0*?'*#@'!%+$".1'H$@?").'(".&"*.:'H*@$)%#5'F0'
                                                                                                                                                                                                                                                                                                                           D<Ae' '
G22+--!.#!?; -.)2+@G!X+N!E+-+&, 21!G3+(9&'
                        F $., 'Q%#1*'Z&$.%:"
                       O*?'*#@'!%+$".1'-))%+$*.$%#'-##C*2'H"".$#7:'H$##"*L%2$)5'HR:'
0\#(-)9+,)(3!.1+!K+=8\#!M55+(9+,@G!Y; &\%.\&.)*+!JV\&=)(\&.)\#(!\#5!1\#N!H,\#I\&.)\#(!G3+(.-')^*
                                                                                                                                                                                                                                                                                                                           D<A9'
```

<,&)()(3!' (9+,3,&9; &.+-!! (")"*&+, 'H"#.%&/'3#\$4"&)\$.1'%E'F\$)+%#)\$#G

FUNDING A ARDS AND HONORS

-?*&@"@'6%#E"&"#+"'"#@*#+"'!CLL%&.'. -##C*2'H"".\$#7' 0#).\$.C."'E%&'(")"*&+, '%#'K%4"&.1"	% ' ''#	@'0*?'*:	#@'!%+\$'	".1'-))%	+\$*.\$%#'	ı	' D <ae'< th=""></ae'<>
! "2"+."@'*)'P&*@C*."'(")"*&+, 'M"22%?'' ' 0#).\$.C."'E%&'(")"*&+, '%#'K%4"&.1"	ı	1	1	1	ı	шп	''''D <a95'd<ae'< td=""></a95'd<ae'<>
-?*&@"@'Y\$))"&.*.\$%#'(")"*&+, '!CLL%&.' 0#).\$.C."'E%&'(")"*&+, '%#'K%4"&.1'	'	•	•	•	1	'	''''D <a95'd<ae'< td=""></a95'd<ae'<>
-?*&@"@'6%#E"&"#+"'"#@*#+"'!CLL%&.'. P&*@C*."'!.C@"#.'F%&X),%L'	%'''#	@'0*?'*:	#@'! %+\$'	".1'-))%	+\$*.\$%#'	ı	' D <a9'< td=""></a9'<>

SERVICE

0#."&@\$)+\$L2\$#*&1'!"\C*2\$.1'!"S\$#*&'6%%&@\$#*.%&'