

! " 6 <dhj] [ I +d] QjZ

kO<[ 日 Njg [ jI g<jQ[ <Y/jkG [ jh

! <gEP ÄÄÄÄ

OPI <dhj] [ I dg Wj Q<日 [ jg-YdQkg] NPI ! <dhj] NPI [ pQ[ ZI[j ¥ " 6! G Qj] • ¥! " 6  
dg NHhQ[ <YQ<G<j] hkJG [ jh<j jPI 1[ qI gQs] N ] YgQ[ kYg gZ kh hK~~田~~ hN~~田~~ Z dYjI <  
A~~田~~g GQp] kg <dhj] [ I +d] Wj <[ Gj Pj I <田 Z d< sQO] [ I Y] kgE kgh h <dhj] [ I [ ] p<jQ[ <DÄ  
¥ Ä• <dhj] [ I [ ] p<jQ[ <DÄ¥ Ä• <[ G <dhj] [ I [ ] p<jQ[ <DÄ¥ Ä! <hd<g] NPI QG Qj I  
g f kQ ZI[jh E kgh h<d G hQ I Gj] PI YQ hkJG [ jhNjZ jPI dg Wj dY] [ QOdP<H jPj kQ  
h[ jPI hQ <[ <YhQ <[ Gj PI dg GkE Q[ ] Ndg NHhQ[ <Y] gQ[ jI Gq] gXdg GkE h< Gh gQ h OPI  
h f kI [ 日 日 [ hQ h] N<Äg GQh kgh hQ jPI NQj NYYh ZI hI gZQ jPI NQj hdgQOH ZI hI g<j jPI h<g  
] NPI <dhj] [ I dg 日 hZ< GQ hkJG [ jh H 日 [ GNYYh ZI hI g<Ygh;GkQ

DKFZ-DOE-DT-04000  
"D "

+Y<YgjgjGk4 PkTA ZQj j

Dipd - " Qpjs QY

Z d] g<[ j j PkOhi] [ ] j| <D] kj j PkO| rB dj Q[ •

Â• OPQ|rB dj Q[ ] [ Y<ddYQhj] hjkG [jh] [g YGQ Q<G<| hjkGQhjPj g f kQ AZ| Qgj|  
d<g Q<G<| Q[ Q[ j g hPQh dg<E GkZ h] g] jPl gl rdl gQ[ j QYY<g QG

Ã• OPQ|rB dj Q[ Q[ ] j <QDY NjgjkG [jh] [g YGQ k[ G g<G<| hjkGQh] gj] Q<G<|  
hjkG [jhqP] H hjkGQh] [ ] j g f kQ AZ| Qgj| j g<QPO

Ä• OPQ|rB dj Q[ Q<QDY] [ Y NjgBkggk Ygdg<E Q<Yg<QPO [ ] j dj Q[ <Ydg<E Q<Yg<QPO

<H G] [ jPl // k[ G g j< QPO] NPl [ <jkq ] NPl ! " 6 <dhj] [ I <E QPOhQ jPl / dgPOh ZI h| g  
// <GQh h| Pj +0 q] kYGDI [ l g<Y [ ] j D [ l l G GDI Ekhj j PkQ <dY [ QODl gPOGj Pj Q [ l g<Y  
G| h[ ] j g f kQ < ] NNE<Z dkhZ Z d] [ l [ j . +0 <kjP] gQj Q[ q] kYGDI [ l l G GQ jPl hkZZl gq Pl [  
jPl hjkG [jhDl QP jPl QQj| g hPQY< E QPOh] NNE<Z dkhGkgPOjPl hdgPOh ZI h| g jPl [ +0  
<kjP] gQj Q[ q] kYGDI g f kQ G< GjPl | rB dj Q[ j] jPl <E G Z Qesl <ghj<| G<D] pl q] kYG<ddY•

] q j] / kDZ Q ] EkZI [ j< Q[ Njg +0

OPi NjYq QOQNjZ <jQ[ Q<GQd g pQ Gds < ! " 6 Qj| g <jQ[ <Yj kG [ j D<H G] [ jPl Qg H <EP•  
< GQd g pQ GNgjgs] kgE [ pl [ Q[ B •+Y<h G kDY<EPi EX<Yg f kQ ZI [jhqQp // j] l [ hkg j Pj s] k  
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j Pj QQNjY<Ekgj| < GkdY] YGj| •

/ jkG [jhZ <QY4@PjZBj dhj] H j < G<E QZ jPl - kgPw g+g@ GQ4@“ js'BU j

] gj P~~Q~~dkgd] h•s] k Z < g~~s~~ Q D g~~s~~ ] hZ I [ X < h j Pl g~~G~~k<j I +g O~~g~~Z G~~P~~ g~~Y~~Q Pl g E~~d~~~~E~~ s < h  
< dhj] [ I I < G

! " 6 h~~g~~ [ O~~s~~ I [ g kg< O h h j k G [ j h j] h d l < X j] / / / j] Y < g Z ] g < D k j +0 < G j] I [ h k g j P< j Pl s  
< g N Y q Q O j Pl < dd g d g~~s~~ j d < j P q < s +Y < h k h j P~~Q~~ Y X j] h E~~P~~ G~~Y~~ < / / / < G~~Q~~ Q O < dd] Q j Z I [ j •

k~~O~~< [ g/j k G [ j h Q Y A/j < j kh

/// P< h < E~~G~~ Z E~~O~~ g Q Q O P< G k j N g Y A h j k G [ j h o Pl h k G [ j h Q Y A h j < k h E< g < E P k j j] Q  
/ E P] g g Y Q D g~~s~~/ E P] g g Y g< G • G k j] G E k h h < E G Z E j g Q Q O

! " 6 ] [ j < h

Q D g~~s~~ ] hZ I [ X  
< dhj] [ I I < G < G d < E P Q O h j • +g N h h] g  
X Q D g~~s~~ X hZ I [ X<sup>3</sup> g Y g< G • G k

O~~Q~~ h s O~~Q~~ h  
+g O~~g~~ Z ! < D g  
j O~~Q~~ h s O~~Q~~ h g<sup>3</sup> g Y g< G • G k