8BTUF 8BUFS 5SFBUNFOU CZ &OWJSPONFOUBM

+LUDO %RUDVL\D DQG 0DXOLQ 3 6KDK

,QGXVWULDO :DWHU 5HVHDUFK /DE 'LYLVLRQ RI $SSOLHG DQG (QYLURQPHQWDO 0LFURELRORJ\ (QYLUR 7H

&RUUHVSRQGLQJ $XWKRU 6KDK ,QGXVWULDO :DWHU 5HVHDUFK /DE 'LYLVLRQ RI $SSOLHG DQG (QY 7HO (PDLO VKDKPS#EHLO FR LQ

5HF GDWH)HEUXDU\ $FF GDWH)HEUXDU\ %XE GDWH)HEUXDU\

&RS\ULJKW ‹ %RUDVL\D HW DO 7KLV LV DQ RSHQ DFFHVV DUWLFOH GLVWULEXWHG XQGHU WKH WHU

WKH ODUJHVW DUHD IRU ELRWHFKQRORJLFDO DSSOLFDWLRQV 8VXDOO\ WKH JRDO RI ELRWHFKQRORJ\ SURGXFWV LV WR V\QWKHVL]H GHVLUHG PHWDEROLWHV RU SURWHLQV RI HVSHFLDOO\ SXUH LVRODWHG VWUDLQ RI PLFURRUJDQLVPV XQGHU RSWLPXP FRQGLWLRQV 7KH ELRWHFKQRORJLFDO SURFHVV GHYHORSPHQW PHGLD VRXUFH FDUERQ HQHUJ\ VRXUFH QLWURJHQ VXOIXU SKRVSKRUXV WUDFH HOHPHQWV DQG YLWDPLQV HVSHFLDOO\ E\ DGGLQJ R[JHQ XVHV FDXVHV JURZWK DQG \LHOGV WKH ELRPDVV LQ FXOWXUDO FRQGLWLRQV ZKLFK LV UHODWHG WR WKH HSURGXFWLRQ RI WKH GHVLUHG PHWDEROLWH RU SURWHLQ 'DWD DQDO\VLV RI WKH H[SHULPHQWDO GDWD LV DQ LPSRUWDQW SDUW RI ELRWHFKQRORJLFDO DSSOLFDWLRQV 7KH SURGXFWLRQ RI PHWDEROLWHV DQG SURWHLQV E\ PLFURRUJDQLVPV LV DQ LPSRUWDQW DVSHFW RI ELRWHFKQRORJ\ :DVWH WUHDWPHQW LV DQ HVVHQWLDO SDUW RI ELRWHFKQRORJLFDO SURFHVVHV DQG PLFURRUJDQLVPV DUH XVHG IRU WKH WUHDWPHQW RI ZDVWHZDWHU IURP YDULRXV LQGXVWULHV 7KH ELRWHFKQRORJLFDO SURFHVVHV DUH SURGXFHG RQ D ODUJH VFDOH E\ XVLQJ ELRUHDFWRUV 7KH SURGXFWLRQ RI PHWDEROLWHV DQG SURWHLQV RQ D PL[HG FXOWXUH PLFURRUJDQLVPV &XUUHQWO\ WKH ELRWHFKQRORJLFDO DSSOLFDWLRQV DUH OLPLWHG GXH WR WKH FRVW RI WKH SURFHVV GHYHORSPHQW DQG VFDOH XS 7KH PDLQ FRVW RI WKH ELRWHFKQRORJLFDO SURFHVV LV GXH WR WKH GRZQVWUHDP SURFHVVLQJ 7KH SURGXFWLRQ RI WKH GHVLUHG PHWDEROLWH RU SURWHLQ LQ WKH ELRUHDFWRU LV DOVR DIIHFWHG E\ WKH SUHVHQFH RI RWKHU PHWDEROLWHV 7KH SUHVHQFH RI RWKHU PHWDEROLWHV FDQ LQKLELW WKH JURZWK RI WKH PLFURRUJDQLVPV DQG WKH SURGXFWLRQ RI WKH GHVLUHG PHWDEROLWH RU SURWHLQ 7KH SURGXFWLRQ RI PHWDEROLWHV DQG SURWHLQV LV DOVR DIIHFWHG E\ WKH SUHVHQFH RI RWKHU PHWDEROLWHV 7KH SUHVHQFH RI RWKHU PHWDEROLWHV FDQ LQKLELW WKH JURZWK RI WKH PLFURRUJDQLVPV DQG WKH SURGXFWLRQ RI WKH GHVLUHG PHWDEROLWH RU SURWHLQ 7KH SURGXFWLRQ RI PHWDEROLWHV DQG SURWHLQV LV DOVR DIIHFWHG E\ WKH SUHVHQFH RI RWKHU PHWDEROLWHV 7KH SUHVHQFH RI RWKHU PHWDEROLWHV FDQ LQKLELW WKH JURZWK RI WKH PLFURRUJDQLVPV DQG WKH SURGXFWLRQ RI WKH GHVLUHG PHWDEROLWH RU SURWHLQ 7KH SURGXFWLRQ RI PHWDEROLWHV DQG SURWHLQV LV DOVR DIIHFWHG 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