

# Transplantation

Amandeep Khurana

Transplant Nephrologist  
Southwest Kidney Institute

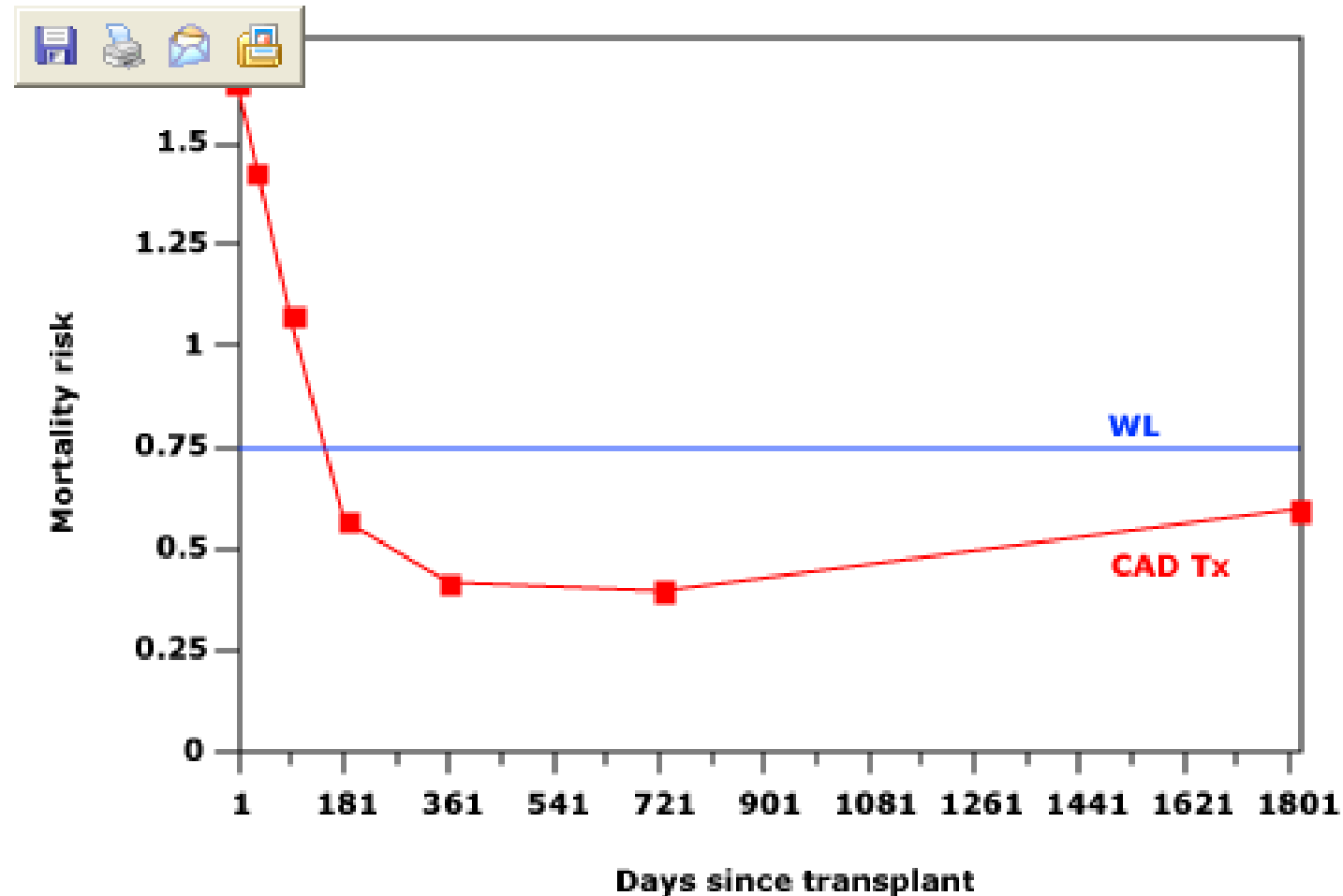


*"I know so much that I don't know where to begin."*

You have been on dialysis for 3 years, a cadaver transplant is offered to you. Do you accept?

- A. No
- B. Yes, because I love immunology
- C. Yes, because I dislike dialysis
- D. Yes, because I'll live longer

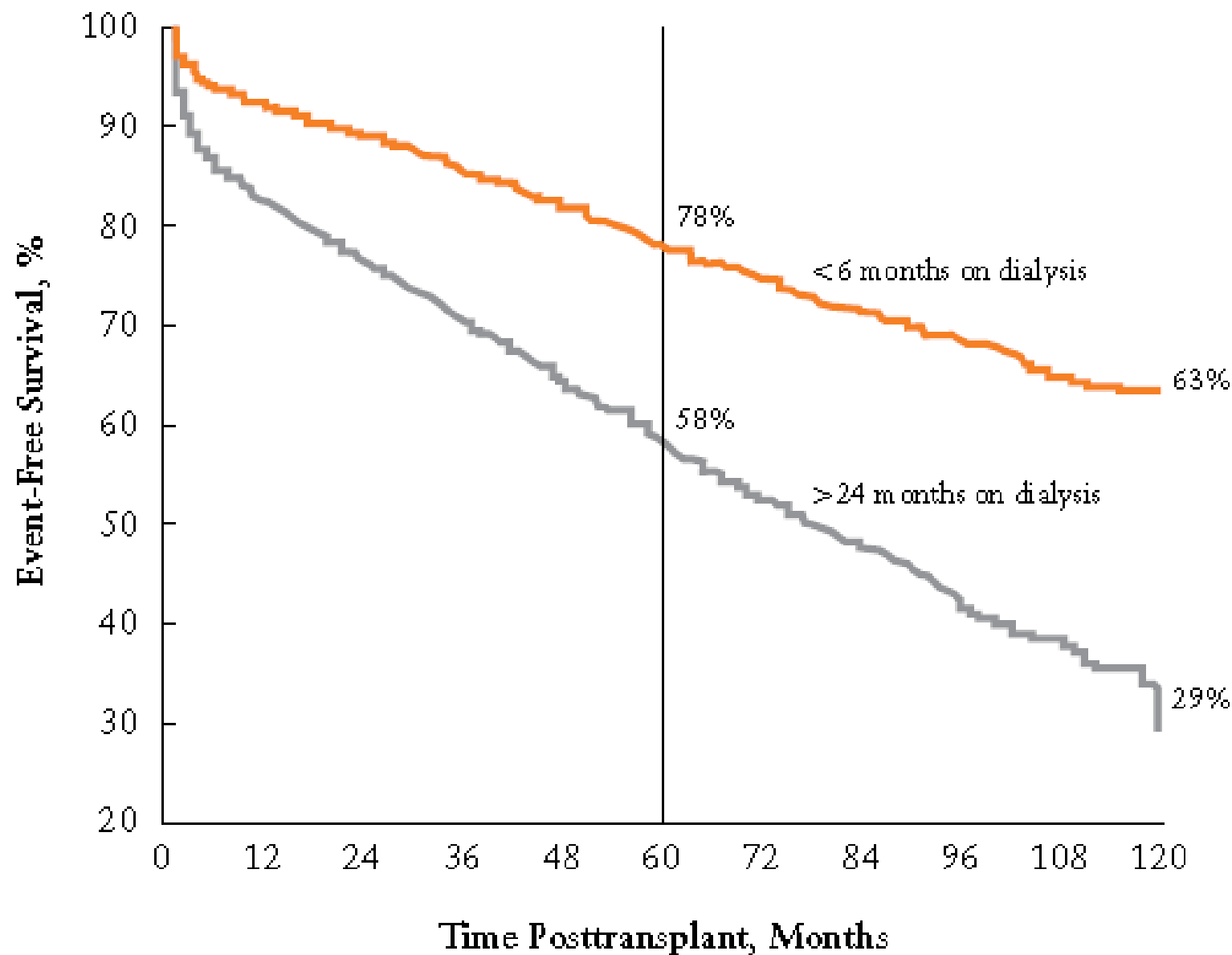
## Mortality risk of recipients of cadaveric renal transplants vs. wait-listed patients with ESRD who were on dialysis for at least 2 years



Reproduced with permission from: Meier-Kriesche, HU, Kaplan, B. Waiting time on dialysis as the strongest modifiable risk factor for renal transplant outcomes: a paired donor kidney analysis. *Transplantation* 2002; 74:1377.

If you were getting a transplant, at what point would you like to get it?

- No dialysis
- HD x 6 months
- HD x 1 yr
- HD x 5 yr

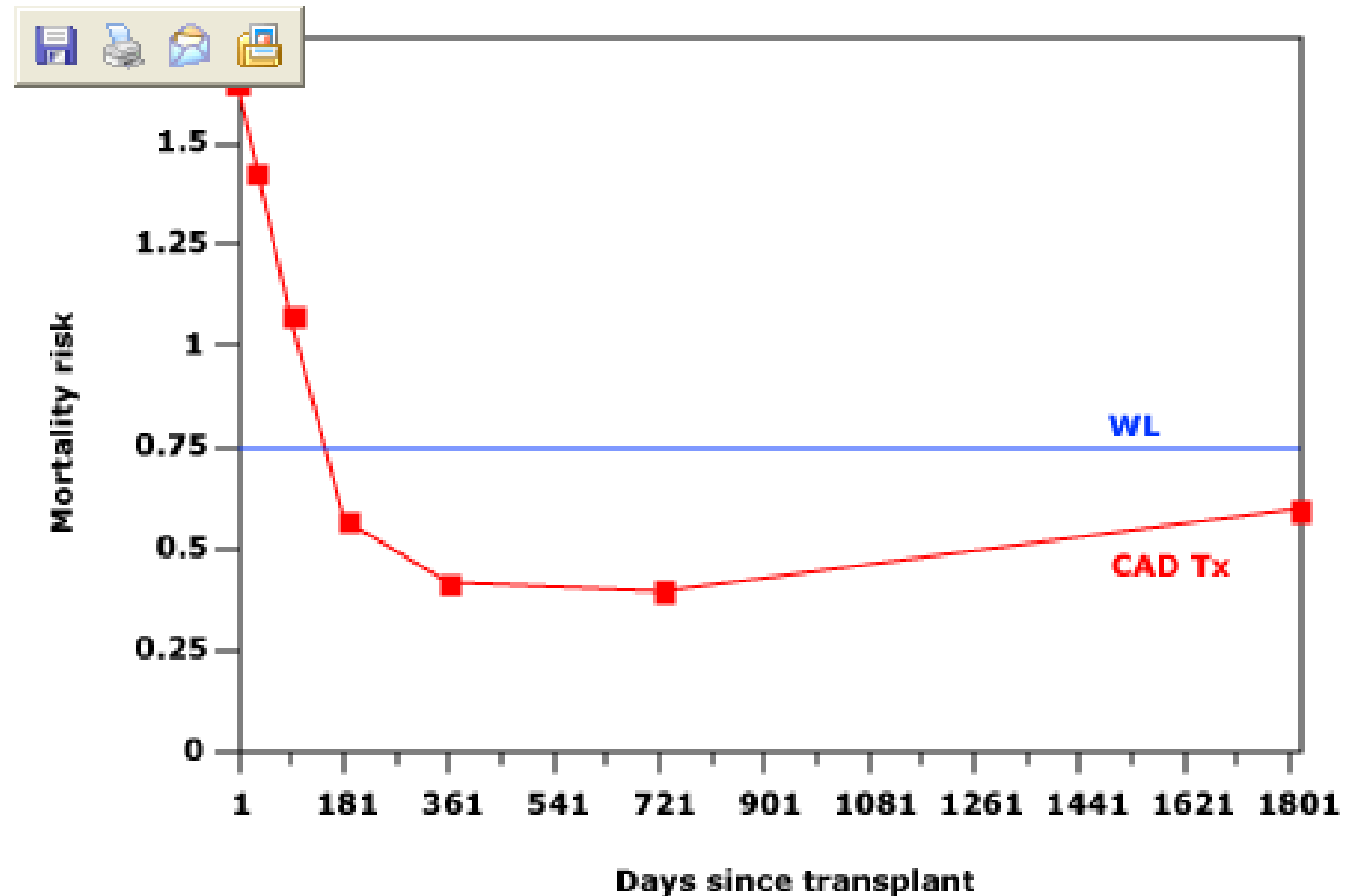


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If your life expectancy was 6 months, and you were offered a transplant, would you accept?

- Yes
- No

## Mortality risk of recipients of cadaveric renal transplants vs. wait-listed patients with ESRD who were on dialysis for at least 2 years

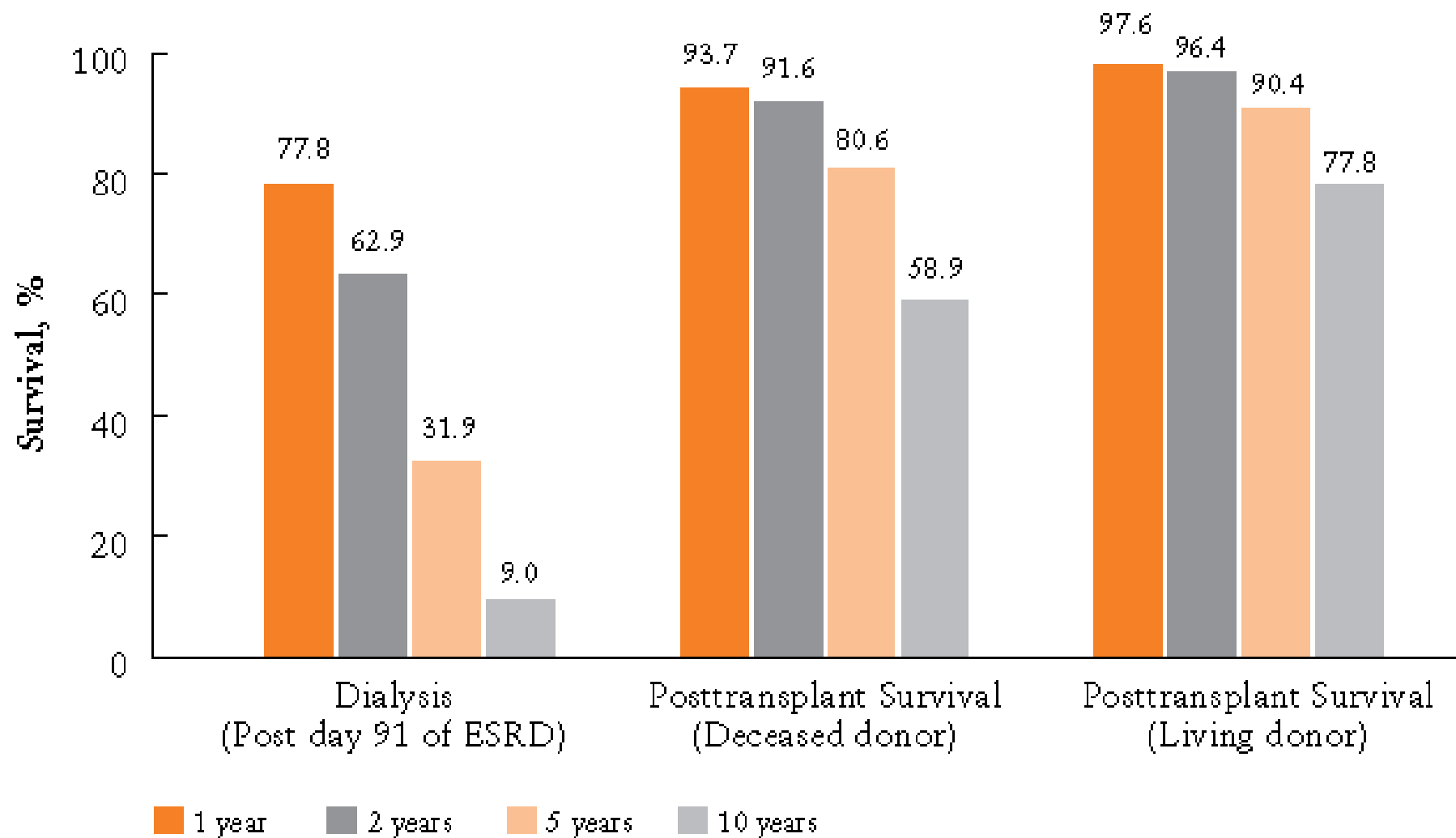


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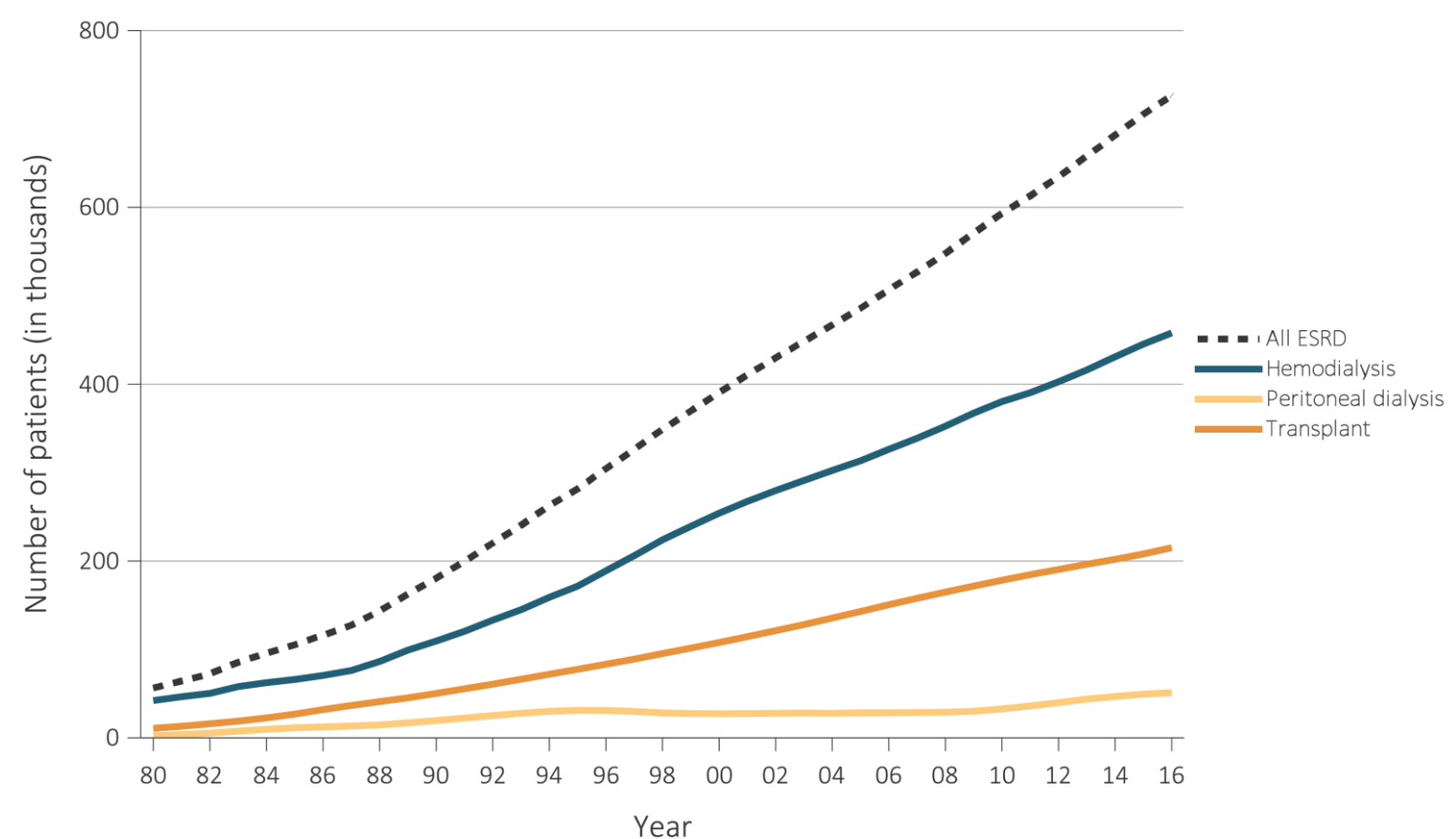


If you were given the option between taking a living donor kidney versus a deceased donor kidney, which one would you pick?

- A. Living donor
- B. Deceased donor

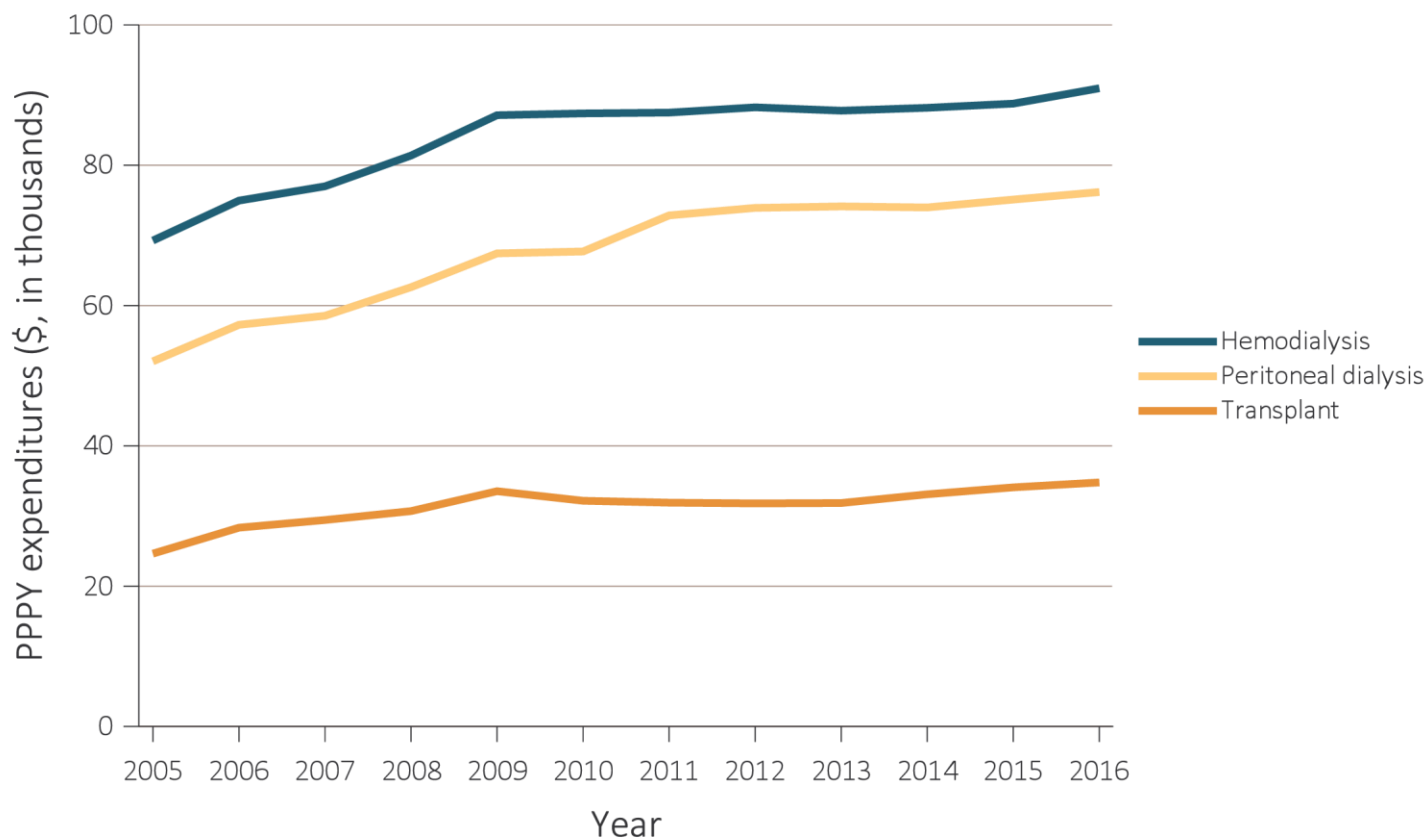


# Trends in the number of ESRD prevalent cases, by modality, in the U.S. population, 1980-2016

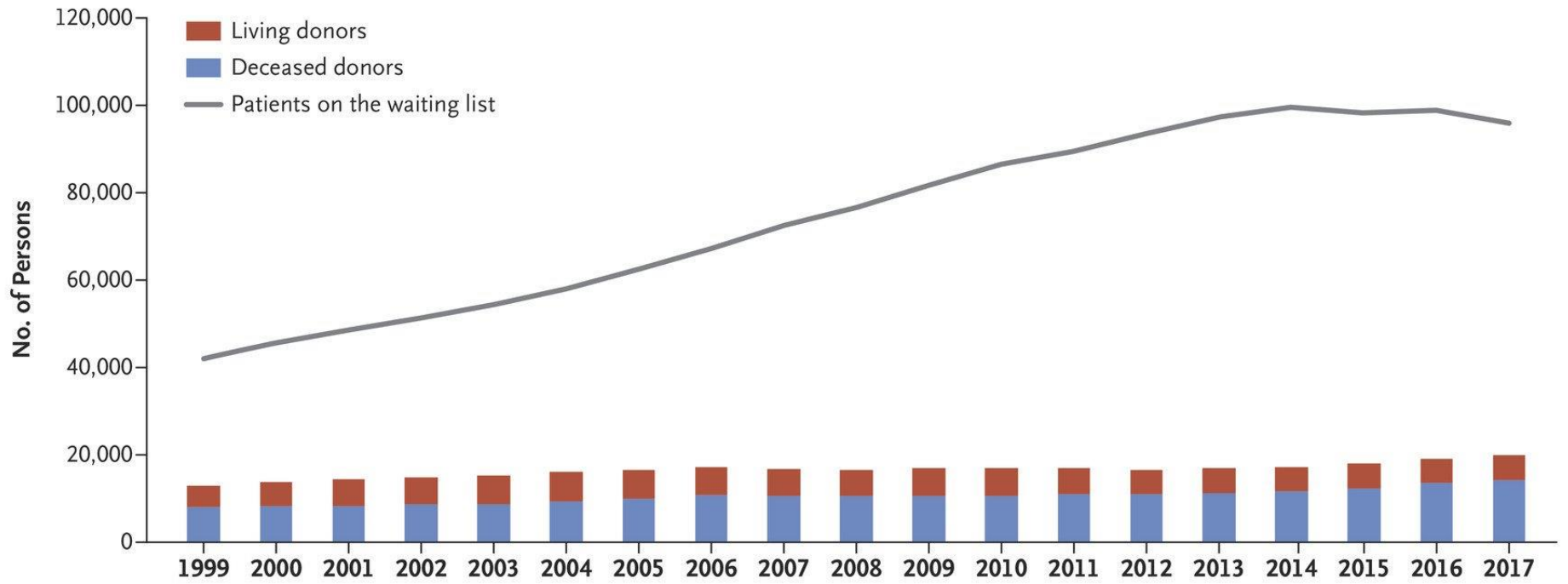


*Data Source: Reference Table D1 and special analyses, USRDS ESRD Database. Abbreviation: ESRD, end-stage renal disease. Persons with "Uncertain Dialysis" were included in the "All ESRD" total, but are not represented separately.*

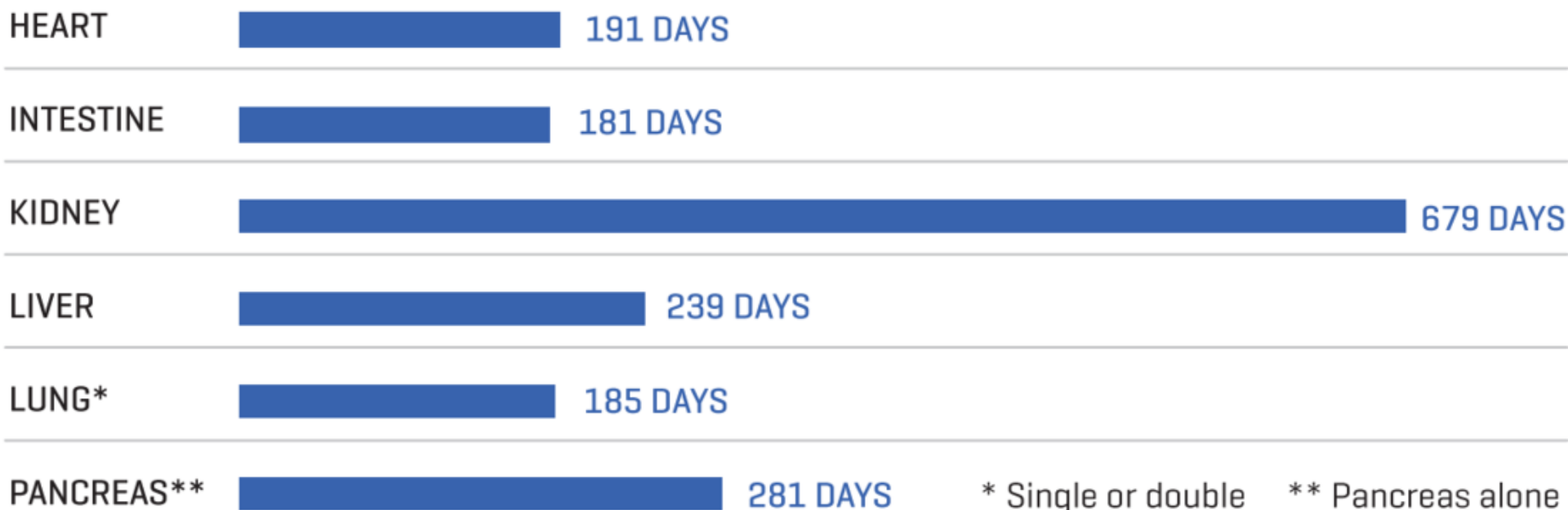
# Total Medicare ESRD expenditures per person per year, by modality, 2004-2016



*Data Source: USRDS ESRD Database; Reference Tables K.7, K.8, & K.9. Period prevalent ESRD patients; includes all claims with Medicare as primary payer only. Abbreviations: ESRD, end-stage renal disease; PPPY, per person per year.*



# AVERAGE WAITING TIMES FOR ORGANS



SOURCE: MILLIMAN, PROJECTED 2017 NUMBERS

## Extended criteria donors

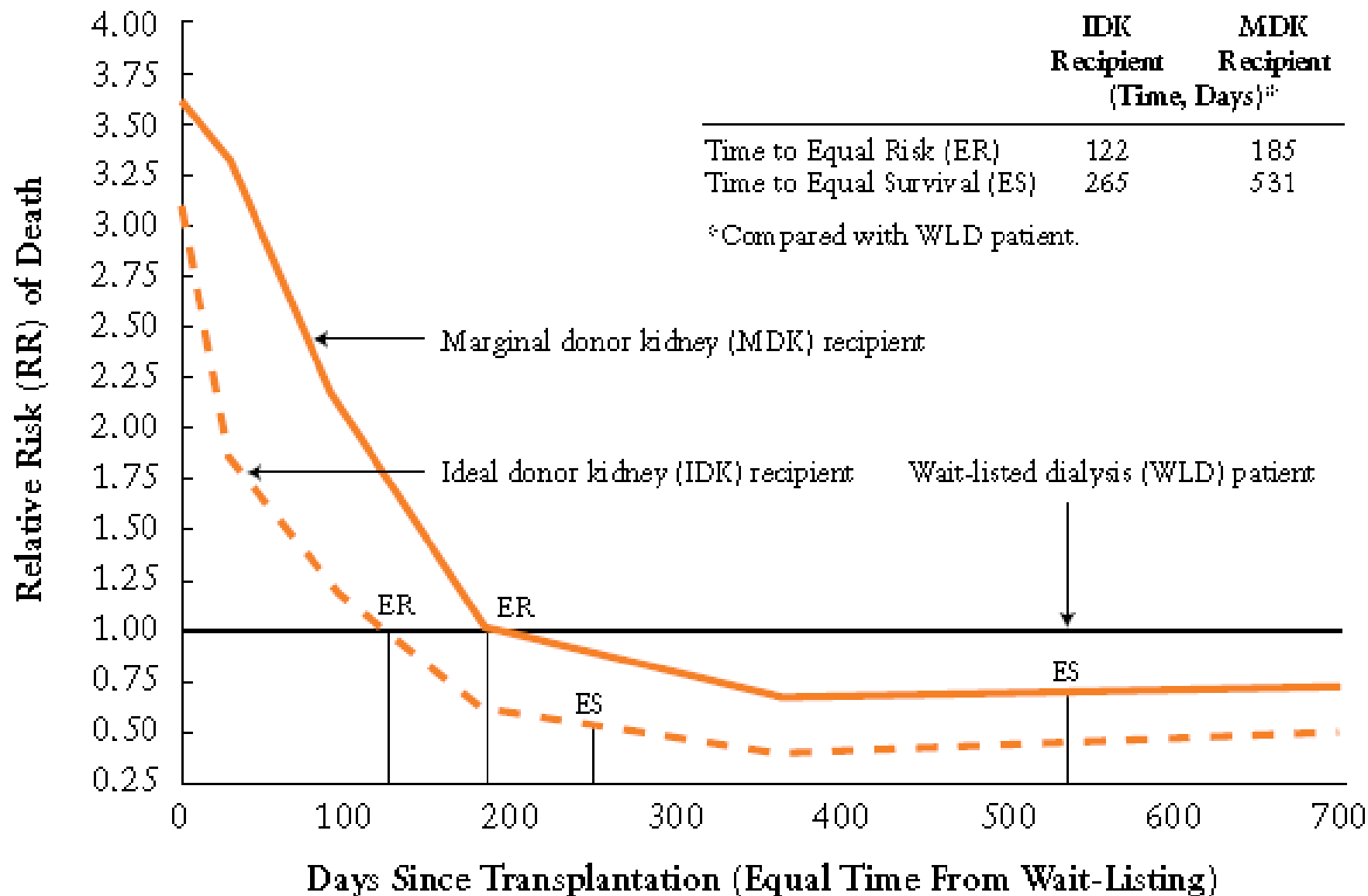
- Age > 60
- Age 50-59 + 2 of the following
  - Cr > 1.5
  - HTN
  - Cerebrovascular death

You have the option of remaining on HD or taking an ECD kidney.....which one would you pick?

A. HD

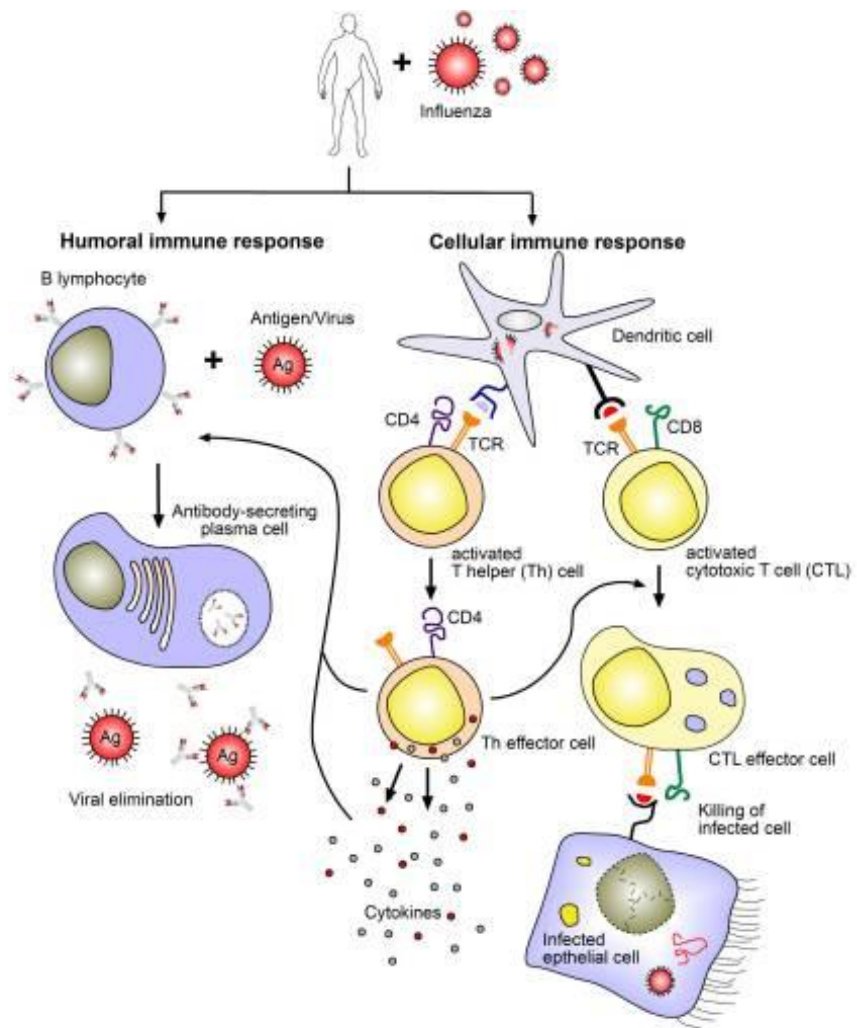
B. ECD kidney



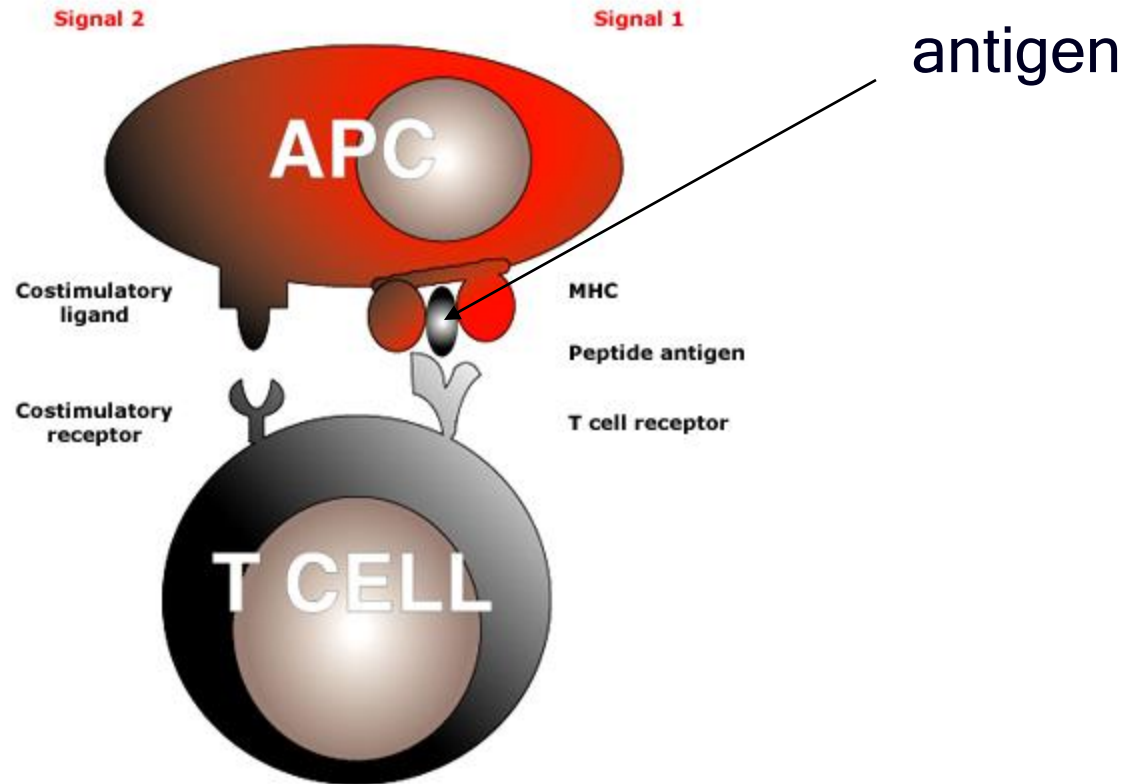


Adapted with permission from Ojo AO, Hanson JA, Meier-Kriesche H, et al. Survival in recipients of marginal cadaveric donor kidneys compared with other recipients and wait-listed transplant candidates. *J Am Soc Nephrol.* 2001;12:589-597.

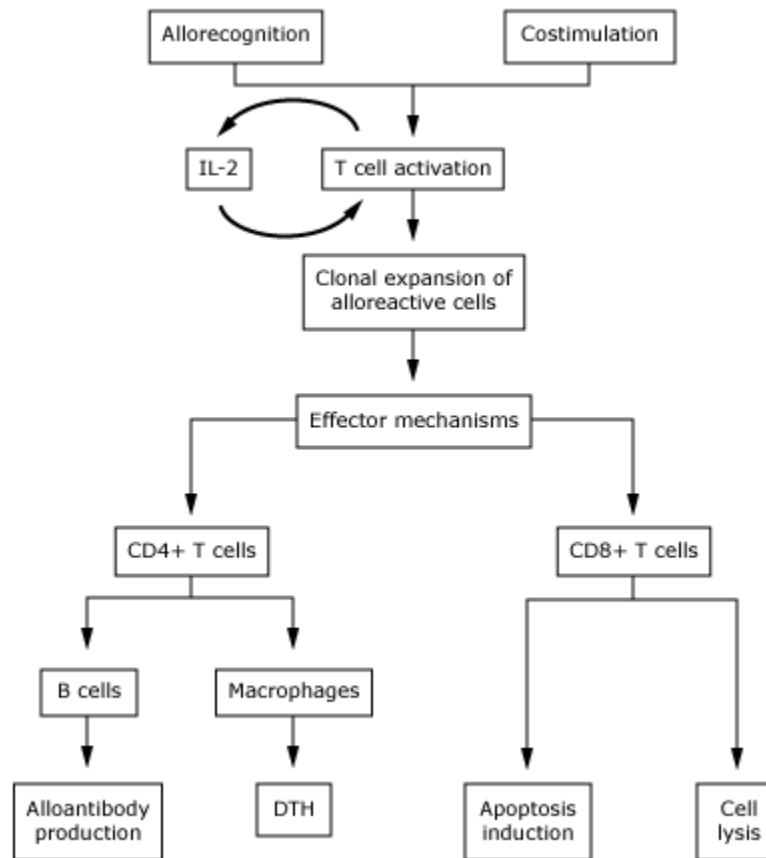
# Transplant Immunology for non-transplant nephrologists



STEP 1 = Ag + APC meets T cell



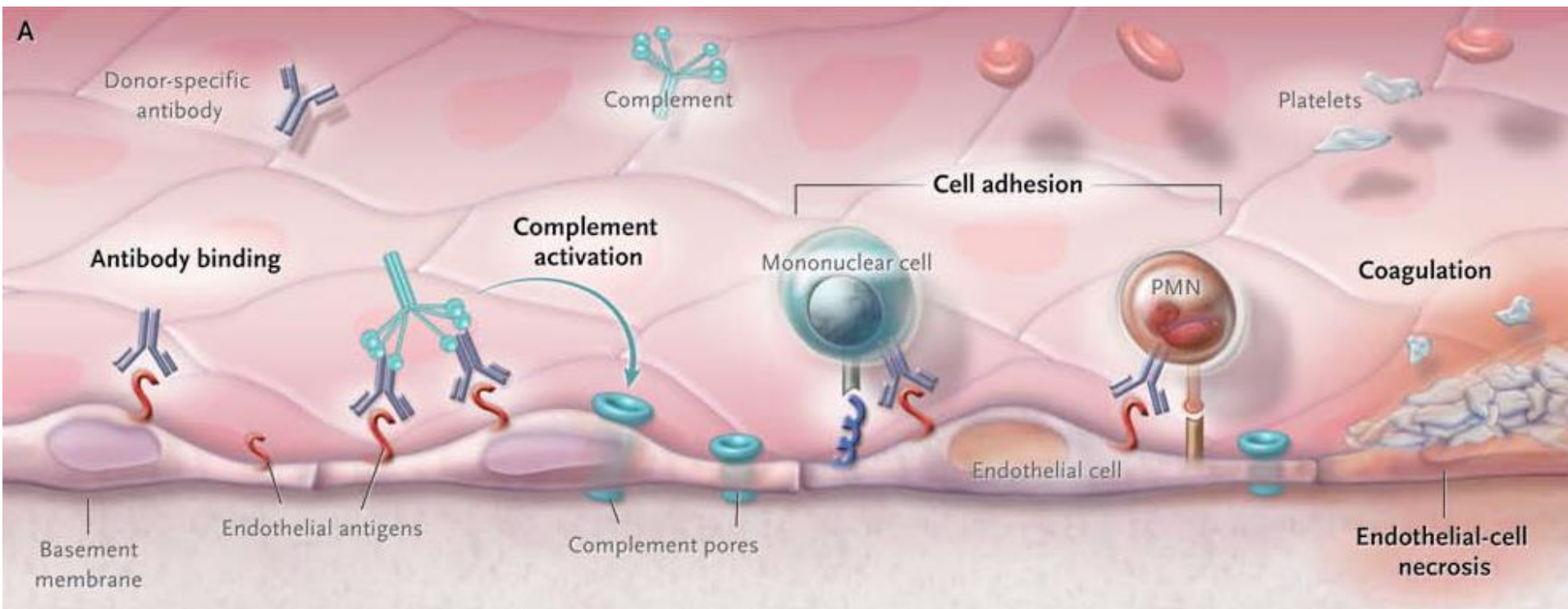
## STEP 2 = T cell activation



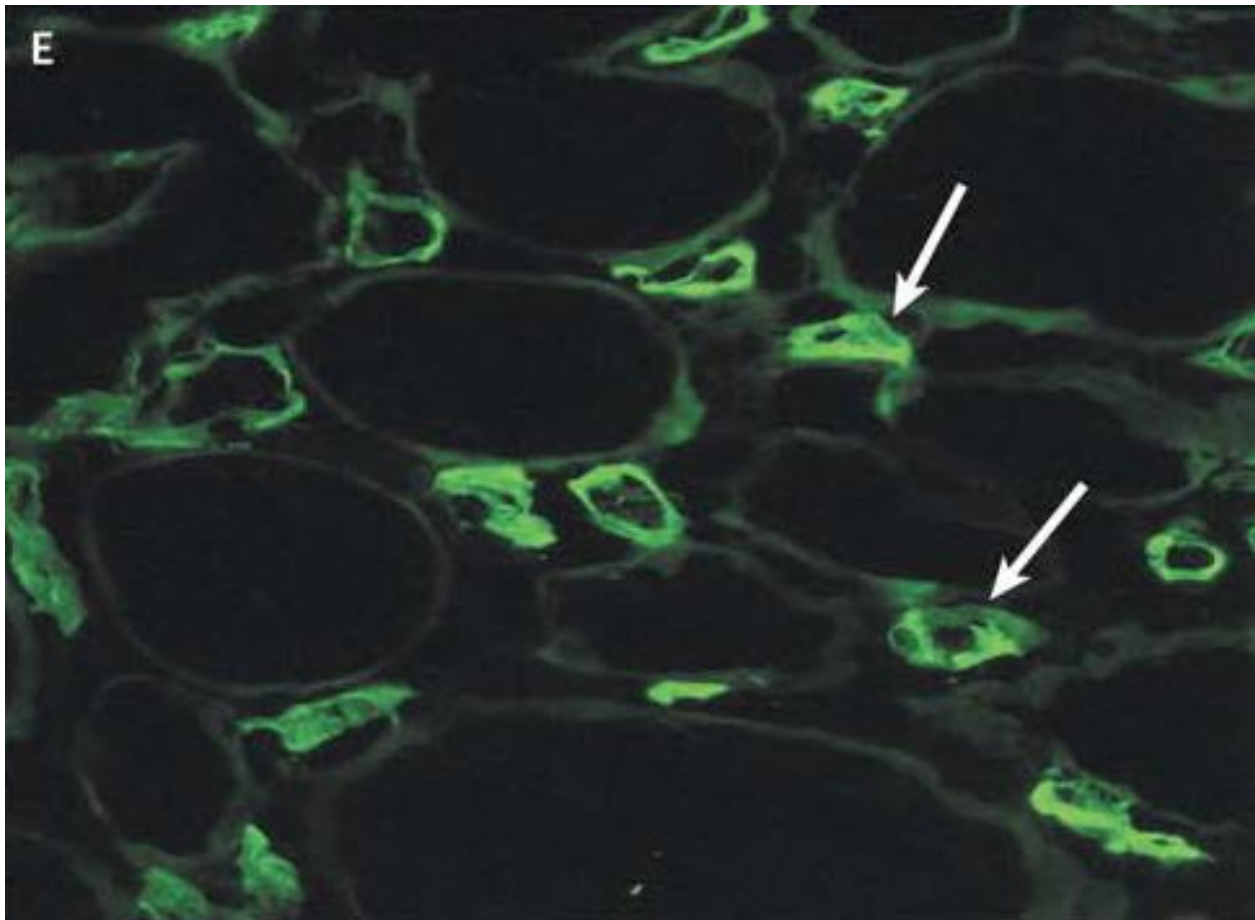
## STEP 3 = Acute Rejection

1. Acute Humoral rejection: B
2. Acute Cellular rejection: T

## STEP 3 = Acute Humoral rejection: B



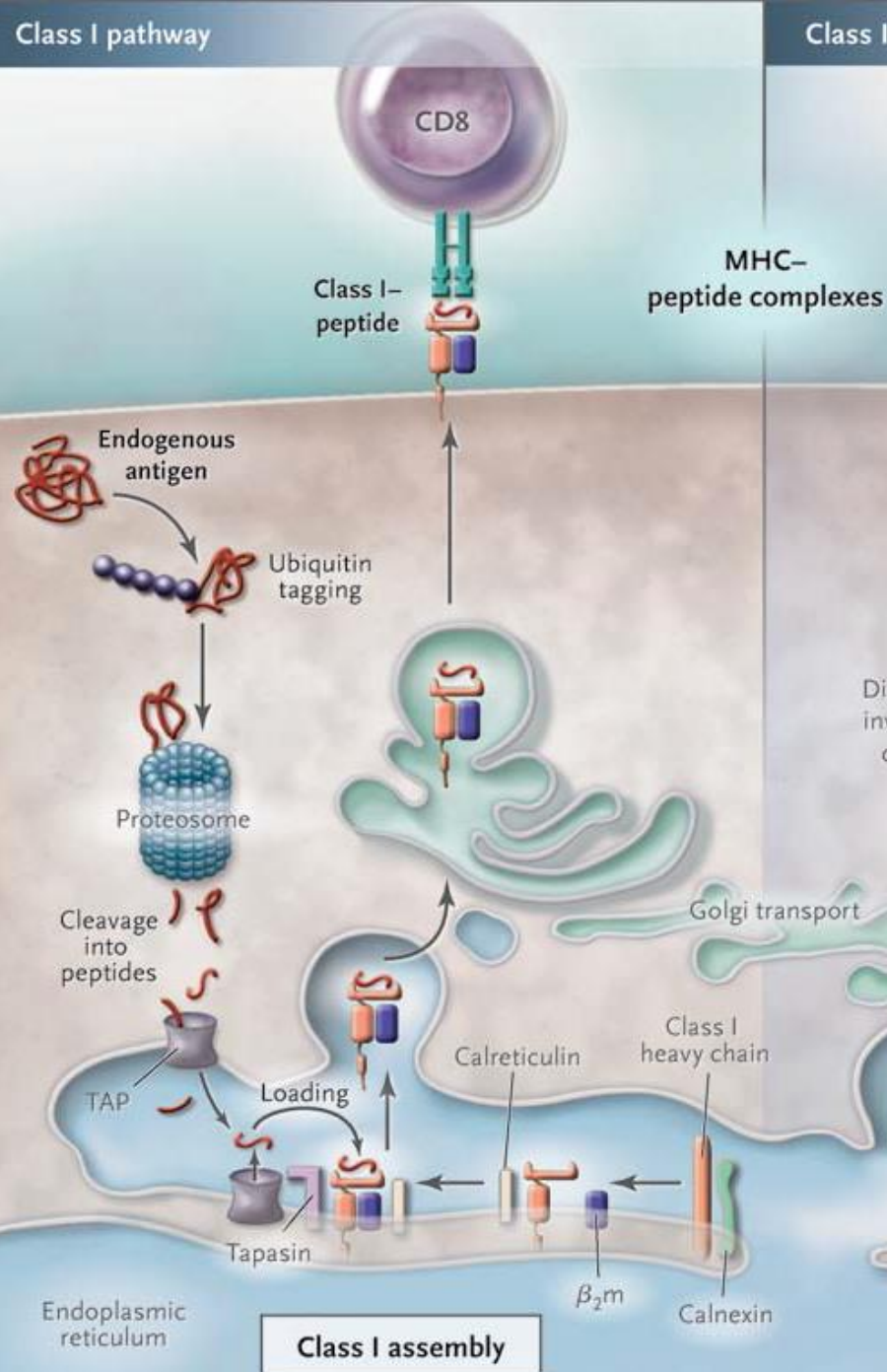
## STEP 3 = Acute Humoral rejection: B



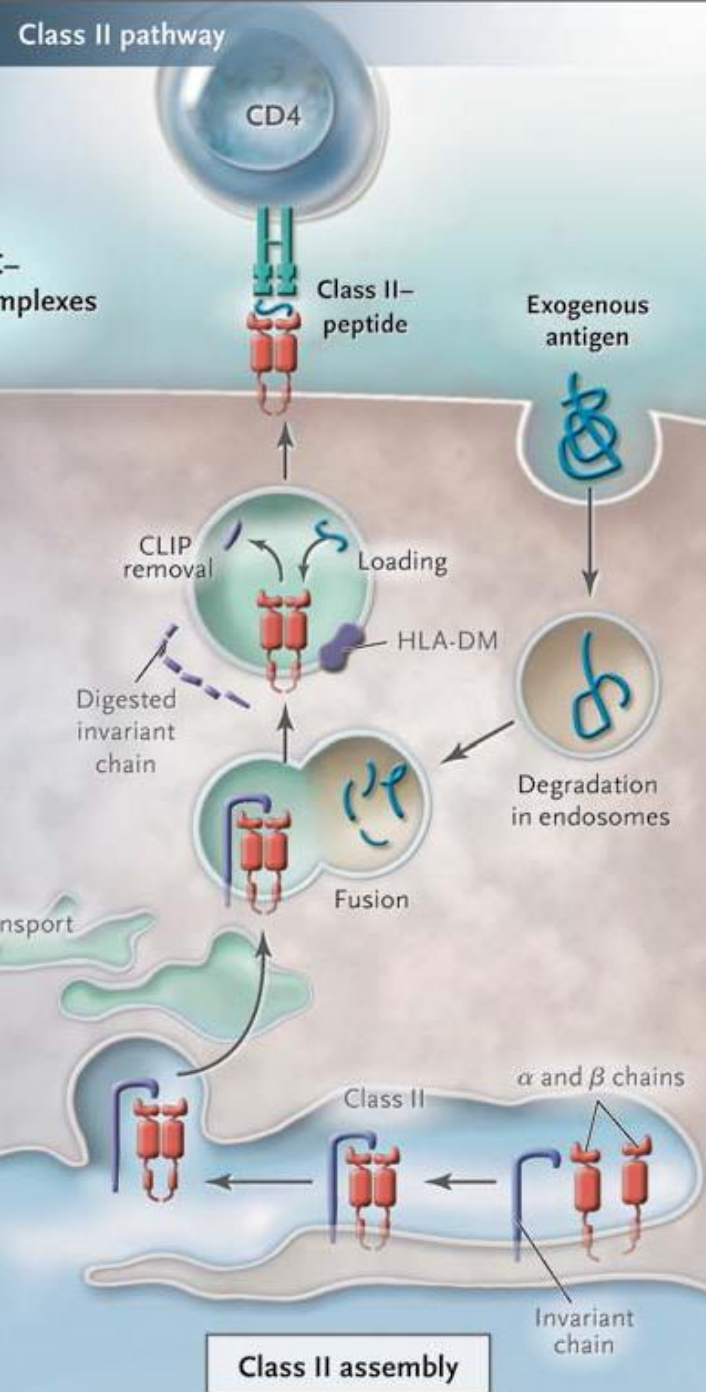


STEP 3 = Acute cellular rejection: T

## Class I pathway



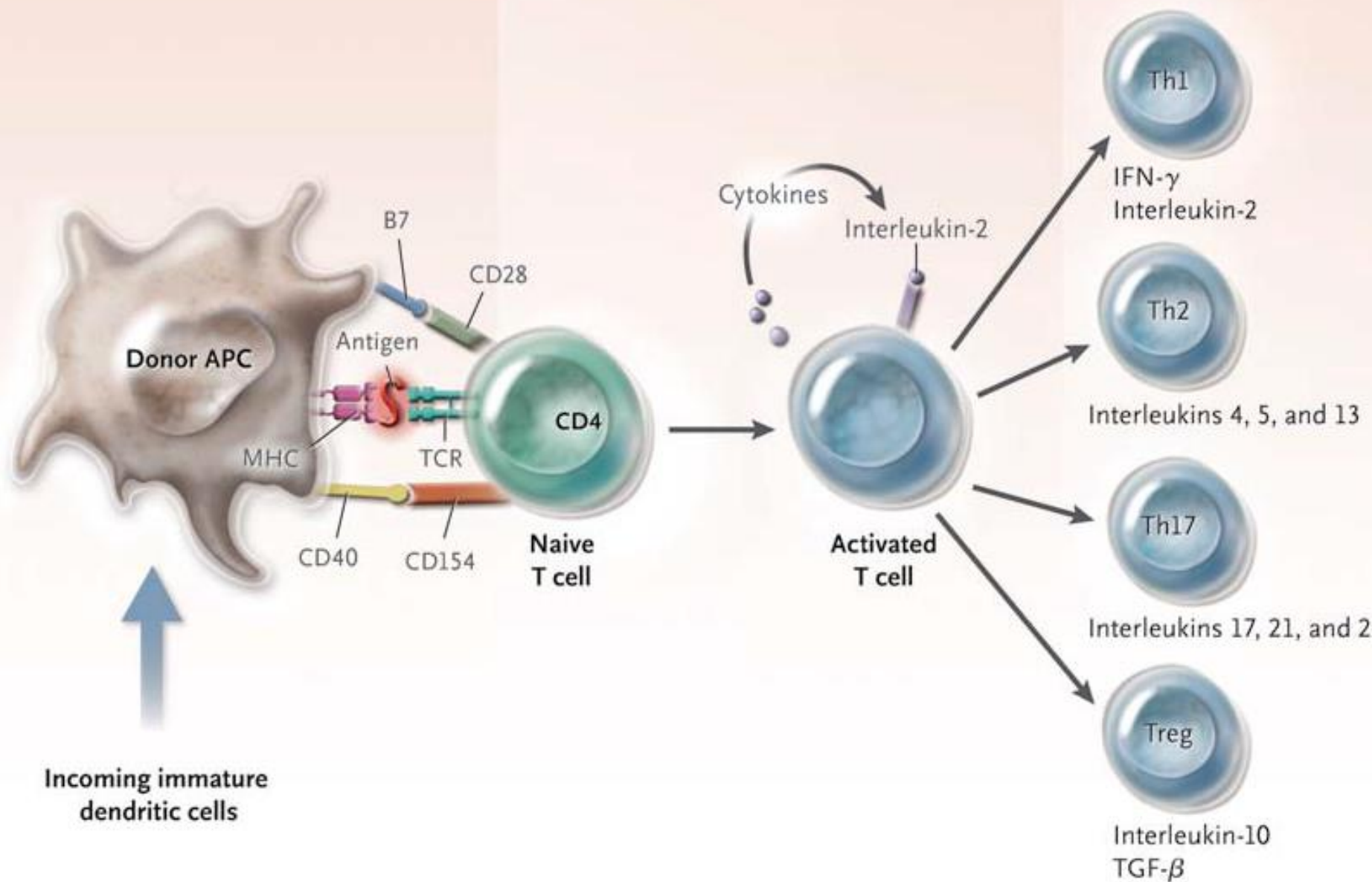
## Class II pathway



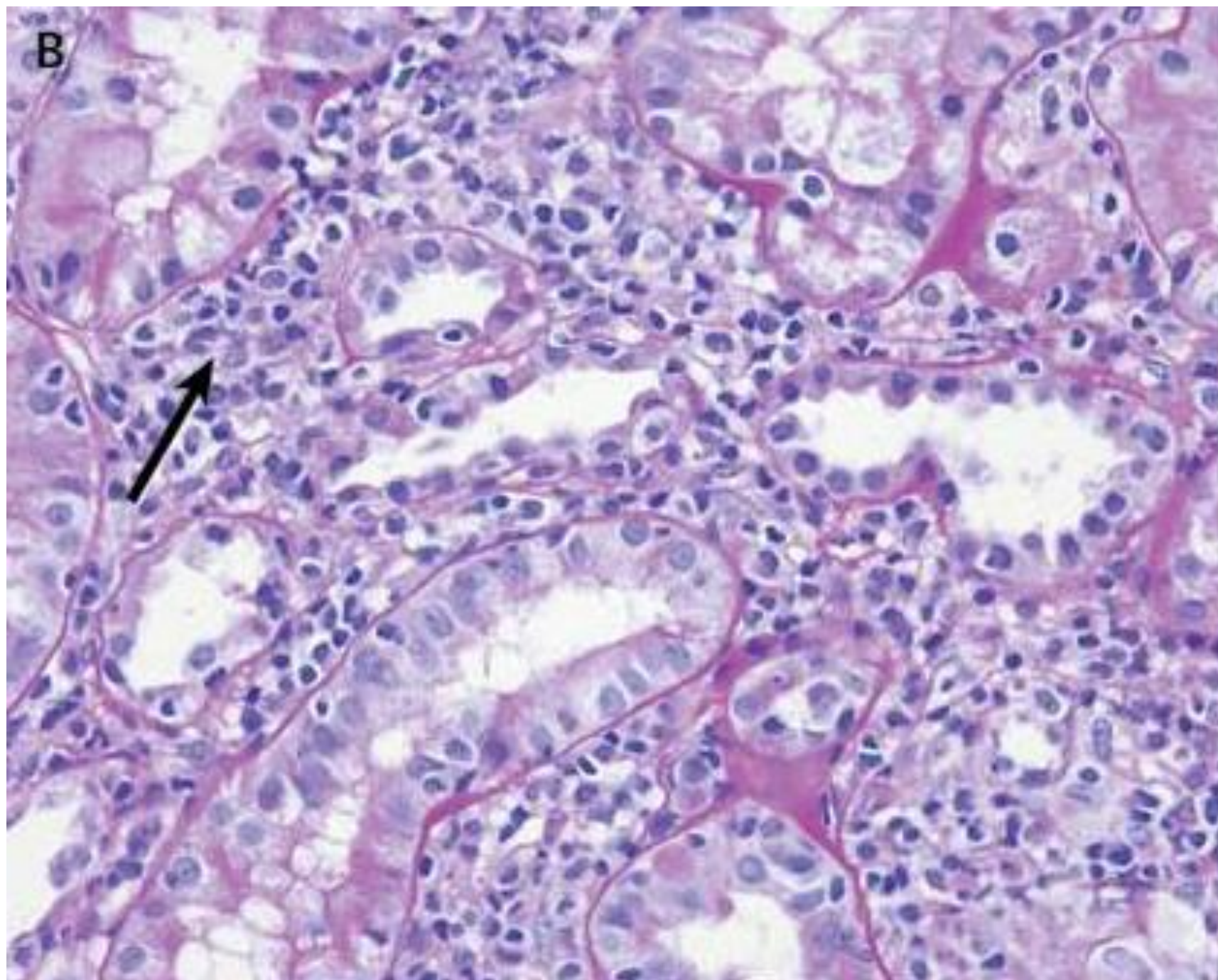
## Dendritic-cell maturation

## Activation and proliferation of effector T cells

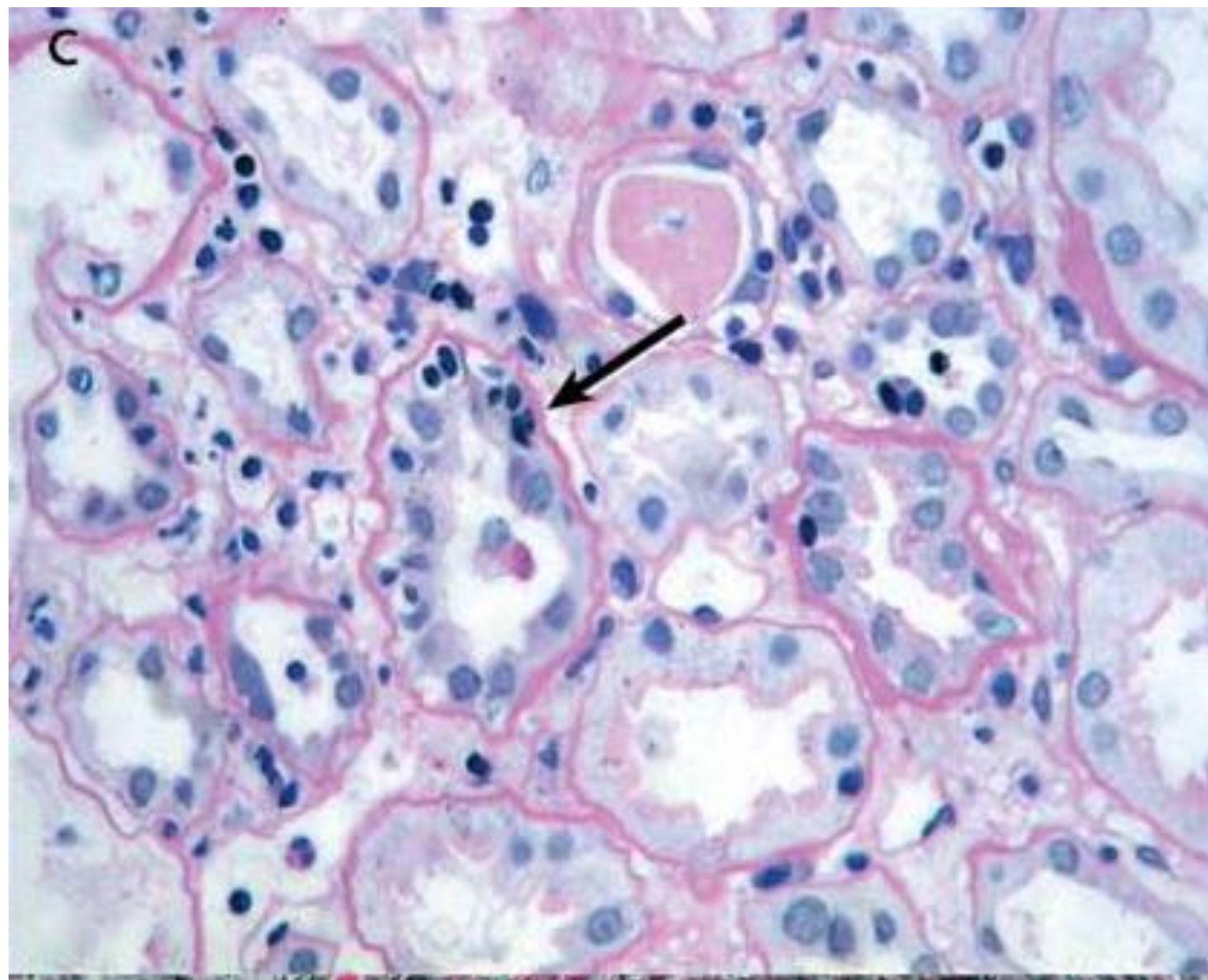
## T-cell products









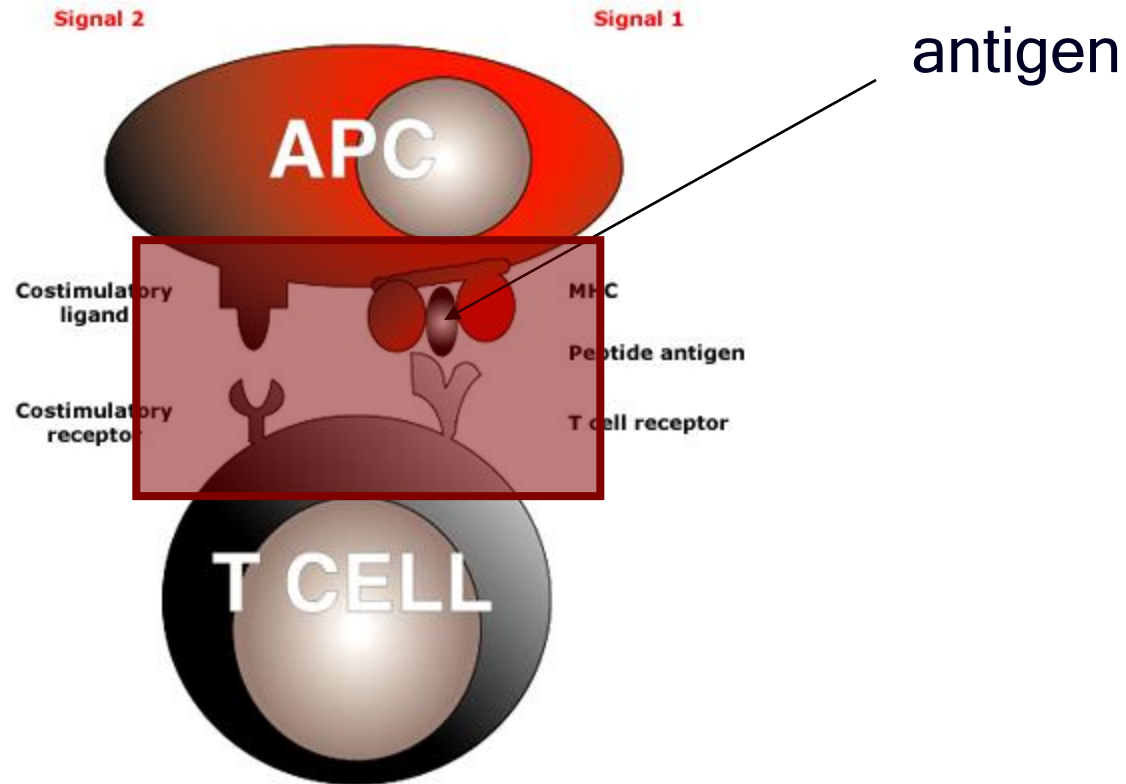


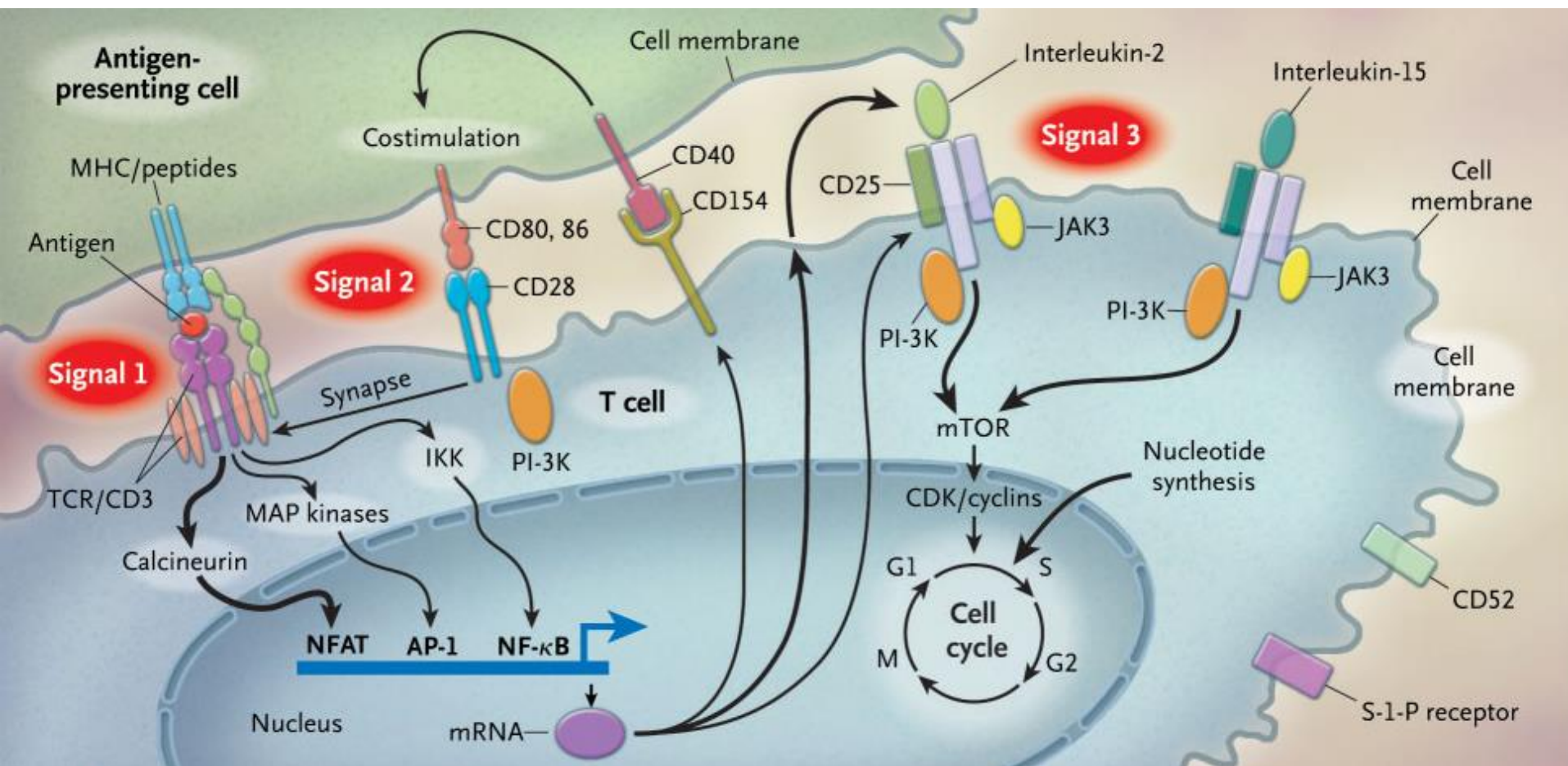
## STEP 3 = Acute cellular rejection: T

**Table 1.** Acute T-Cell–Mediated Rejection.\*

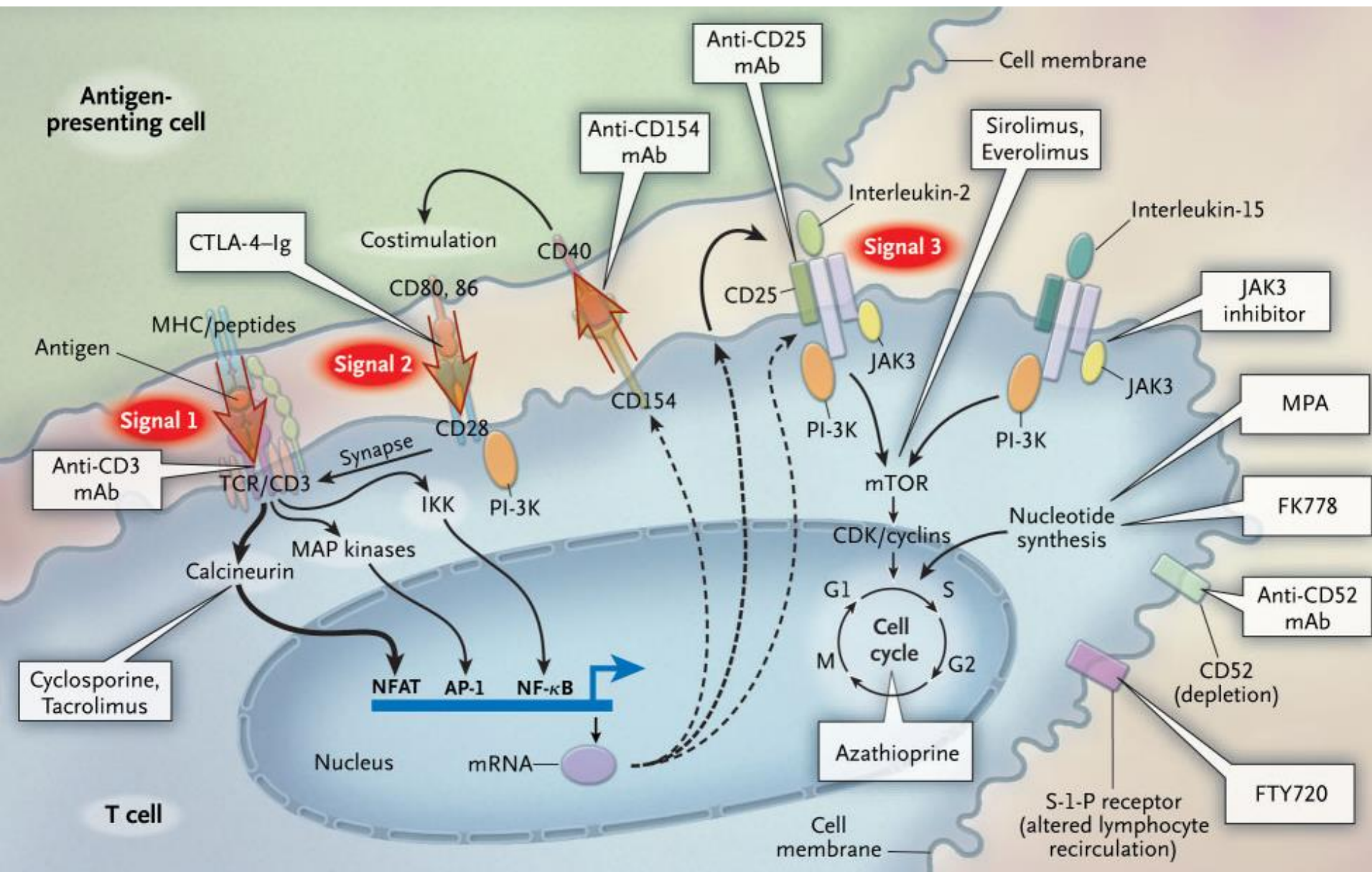
Banff Grade	Description
IA	Interstitial infiltration, with >25% of parenchyma affected (mononuclear-cell–infiltration inflammation score, 2 or 3) and foci of tubulitis (tubulitis score, 2)
IB	Interstitial infiltration; same as grade IA for infiltration but with foci of severe tubulitis (tubulitis score, 3)
IIA	Mild-to-moderate intimal arteritis (vasculitis score, 1)
IIB	Severe intimal arteritis comprising >25% of the luminal area (vasculitis score, 2)
III	Transmural arteritis or arterial fibrinoid change and necrosis of medial smooth-muscle cells with accompanying lymphocytic inflammation (vasculitis score, 3)

STEP 1 = Ag + APC meets T cell









# Induction

## High dose conventional agents

Calcineurin inhibitor:  
Cyclosporine or tacrolimus

Corticosteroid

Antimetabolite: Mycophenolate  
mofetil or azathioprine

## Antibody induction

Alemtuzumab (CD52)

ATG

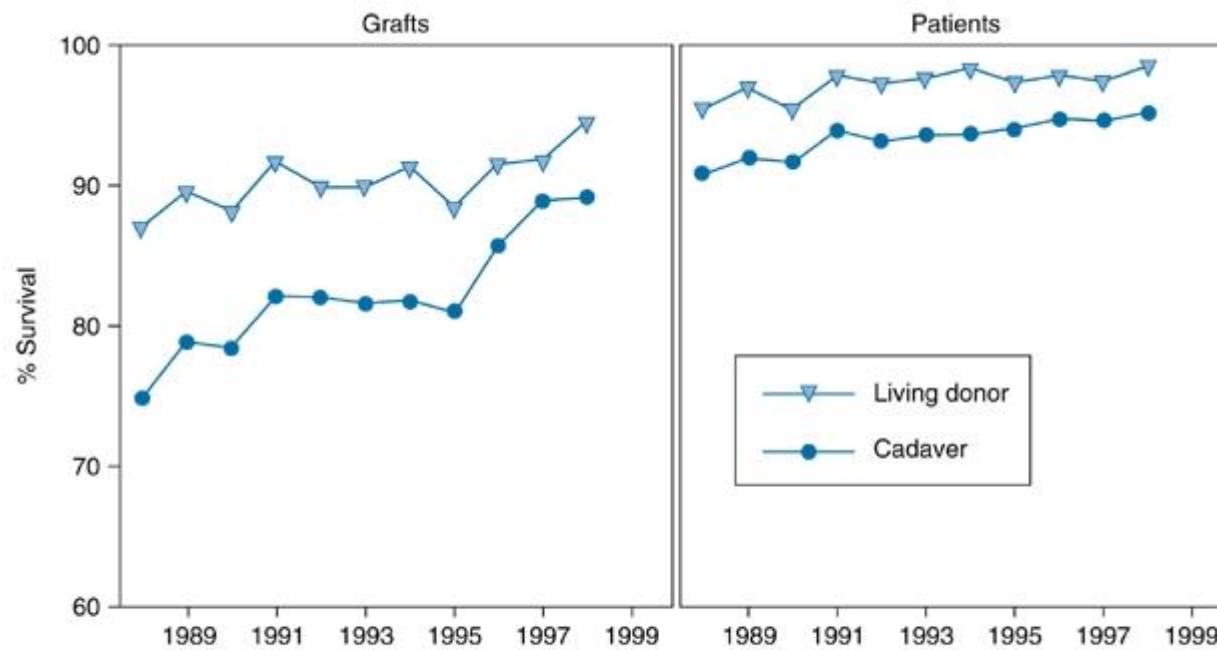
Basiliximab (IL-2R)

# Maintenance

- Cellcept 1g BID
- Prograf
- Steroid free

Are kidney transplants (and patients) surviving longer than in the 1980s?

- A. Of course
- B. Absolutely
- C. Yes



(From USRDS: USRDS 2001 Annual Data Report: NIH and NIDDK, Bethesda, MD, 2002.)

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Questions?