Advantages and disadvantages of deceased versus living donors are listed in Table 32-3. There is an effort to increase living donation because the deceased donor supply is inadequate. The main advantages of a living related donor transplant are less ischemic injury and better histocompatibility matching (Fig. 32-5). However, with procedures to reduce antibodies, including plasmapheresis and pretransplantation immunosuppressive therapy, it is possible to successfully perform kidney transplantations in patients with high levels of antibodies or even ABO blood group incompatibility with the donor.

TABLE 32-3 COMPARISON OF DONOR SOURCES FOR KIDNEY TRANSPLANTATION

ADVANTAGES	DISADVANTAGES
LIVING DONOR	
Better tissue match with less likelihood of rejection	Small potential risk of operation to donor
Smaller doses of drugs for immunosuppression	Requirement of willing, medically suitable family member or other person
Waiting time for transplant reduced	
Sequelae of long-term dialysis avoided	
Elective surgical procedure	
Better early graft function with shorter hospitalization	
Better short-term and long-term success	
DECEASED DONOR	
Availability to any recipient	Tissue match not as similar
Availability of other organs for combined transplants (i.e., kidney-pancreas transplant)	Waiting time variable
Availability of vascular conduits for complex vascular reconstruction	Operation performed urgently
	Early graft function possibly compromised
	Short-term and long-term success not as good as from living donor

Immunosuppressant Drug Therapy

Prophylaxis against and treatment of graft rejection are at the heart of the success of kidney transplantation. All protocols for immunosuppression aim to disrupt the lymphocyte cell cycle, and many include some period of exposure to corticosteroids. The mechanisms of action of commonly used immunosuppressants are illustrated in Figure 32-6.

The hepatic cytochrome P-450 system is essential for metabolism of cyclosporine, tacrolimus, and rapamycin. Significant changes in the levels of these drugs may occur when patients start or discontinue taking any of several drugs that can induce or inhibit this system. Therefore, evaluation for drug-drug interactions is critical to prevent toxic or even subtherapeutic effects of either the immunosuppressant drug or the other prescribed therapy.

Cyclosporine exerts its activity by inhibiting immunocompetent lymphocytes in the G_0 and G_1 phases of the cell cycle. Side effects of cyclosporine include hematologic suppression,

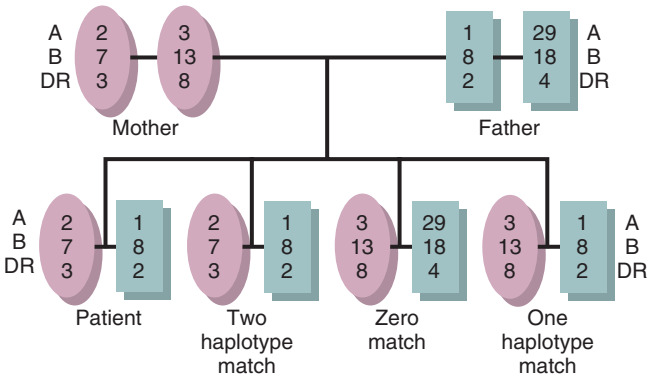

FIGURE 32-5 Diagrammatic representation of possible inheritance of human leukocyte antigen tissue types *(A, B, DR)* in a family with four siblings.

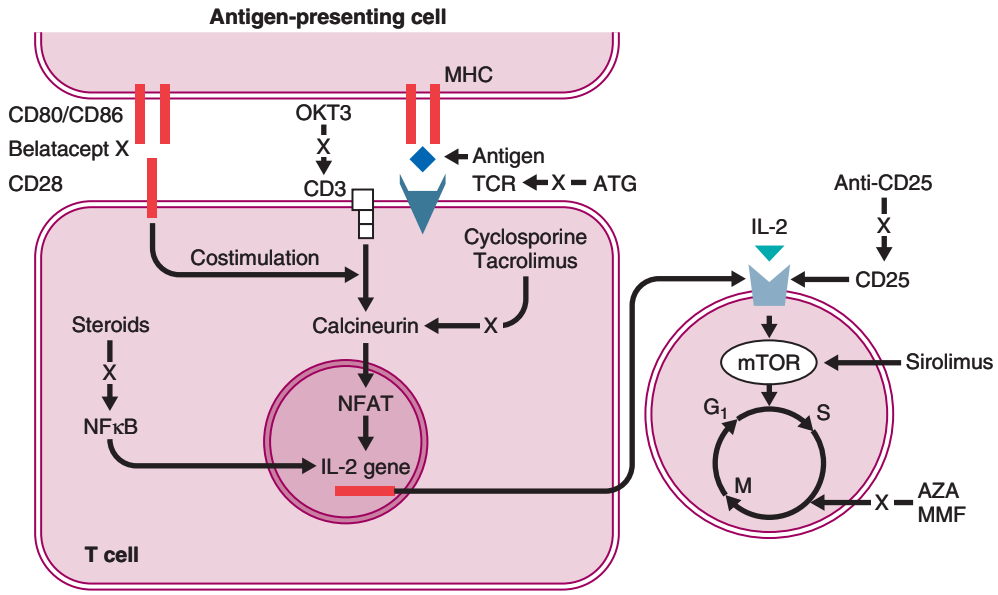

FIGURE 32-6 Pathways of T-cell activation and sites of action of various immunosuppressive agents. ATG, Antithymocyte globulin; AZA, azathioprine; IL, interleukin; MHC, major histocompatibility complex; MMF, mycoplasma membrane fraction; mTOR, mammalian target of rapamycin; NFAT, nuclear factor of activated T cells; NF-κB, nuclear factor-κB; OKT3, anti-CD3 antibody; TCR, T-cell receptor. G_1, S, and M are phases of the cell cycle.