Autologous Banking Encyclopedia Article

Autologous Banking

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Autologous Banking

Autologous banking is the recovery and storage of an individual's own blood. The blood can be from the circulating blood, and is obtained in the same way that blood is obtained during blood donation procedures. As well, blood can be recovered from the umbilical cord following the birth of an infant. In both cases, the blood is stored for future use by the individual or for the extraction of a particular form of cell known as the stem cell.

Blood and blood products (e.g., plasma) can be stored in frozen form for extended periods of time without degrading. Thus, autologous banking represents a decision by an individual to maintain his/her blood in the event of a future mishap.

One motivation for autologous blood banking can be the increased assurance that the blood that will be used in subsequent operations or blood transfusions is free of contaminating **microorganisms** (e.g., **HIV**, **hepatitis**, etc.). Regardless, even with blood screening technologies there are still several hundred thousand transfusion-associated cases of hepatitis in the United States each year. From an immunological viewpoint, another reason for autologous banking is that autologous blood will be immunologically identical to the blood present at the time of return transfusion. This eliminates the possibility of an immune reaction to blood that is antigenically different from the individual's own blood.

The autologous blood collected from the umbilical cord is a source of stem cells. Stem cells are cells that have not yet undergone differentiation into the myriad of cell types that exist in the body (e.g., red blood cells, white blood cells, tissue cells), and so retain the ability to differentiate. Thus, under appropriate conditions, stem cells can be encouraged to differentiate into whatever target cell is desired. Although this reality has not yet been fully realized, the potential of stem cell technology as a therapy for various diseases has been demonstrated.

Umbilical cord blood cells also offer the advantage of being a closer match immunologically between individuals. The differences in blood cells between individuals due to the so-called major **histocompatibility** antigen is not as pronounced in cord blood cells. Thus, umbilical cord blood cells and tissue can be used for donation and transplantation. In addition, cord blood from closely related individuals can be pooled without inducing an immune response upon the use of the blood.