Abstract The fundamentals of the human body are the ultimate way of explaining the distraction osteogenesis. However, cellular stages and histological findings usually have not been the primary object for orthopedic surgeons unlike the technical features of the method. However, for understanding the fracture healing and union along with the molecular studies, histological and embryological knowledge are extremely important. Human body tries to grow and evolve even in intrauterine life. The reactions to the injuries are similar to the development of the human embryo. Prof. Dr. Gavril Abramovich Ilizarov has never kept apart his invention from the histological and molecular field. In this chapter of the book that is planned for explaining the technique and philosophy of course, you will find some information about histology and biology of distraction osteogenesis.