Organ–on–a–chip bioreactors As the previous examples illustrate, bioreactors typically have been employed to address challenges of scale–up.Microliter volumes of fluid are pumped to the cells through channels that allow the effects of multiple concentrations of growth factors or pharmacologi– cal agents to be rapidly tested.Early modifications to these systems enabled the use of high–density 3D cell culture using multi–cell aggregates, microspheres, and cell encapsulation to better recapitulate the cell–cell interactions of native tissues in ways not possible in 2D culture.However, miniaturized tissues created by using microfluidic bioreactors facilitate efficient, inexpensive, high–throughput drug screening or disease .modeling