This COST Action “Theory of hot matter and relativistic heavy-ion collisions” (THOR) creates a theoretical community platform as counterpart to the ongoing vigorous experimental activities. THOR will for the first time allow to fully exploit Europe’s exceptional potential in this field of theoretical research. THOR will pioneer novel approaches to the theoretical understanding of the properties of QCD from first principles and on the interpretations of these properties by effective models and numerical simulations of the system’s evolution. By this, THOR will provide new insights on the paramount questions of the field. Therefore THOR aims at bringing together excellent researchers in order to pinpoint and discuss the challenges that the field meets currently and in the near future for creating a vibrant, innovative and world-leading pan-European research environment.