

The present invention relates to a process for the non-destructive determination of gender, developmental stage and/or viability of an avian embryo in an egg, comprising (a) detecting at least a first developmental marker compound selected from sugars and/or amino acids, precursors and metabolites thereof in an egg at a time period of from the beginning of the incubation of the egg until the hatching; (b) measuring the amount of the at least first detected developmental marker compound, and (c) comparing the amount to a base line established for male and female, developmental stage of the embryo, and/or alive and deceased or non-developed embryo, to determine whether the embryo is viable, male and/or female, and/or the developmental stage of the embryo.