This article was inspired by the inverse problem of Galois theory. Galois groups are realized as number theoretic symmetry groups realized physically in TGD a symmetries of space-time surfaces. Galois confinement as an analog of color confinement is proposed in TGD inspired quantum biology.

Two instances of the inverse Galois problem, which are especially interesting in TGD, are following:

{\bf Q1}: Can a given finite group appear as Galois group over Q? The answer is not known.

{\bf Q2}: Can a given finite group G appear as a Galois group over some EQ? Answer to Q2 is positive as will be found and the extensions for a given G can be explicitly constructed.

The TGD based formulation based on M^8-H duality in which space-time surface in complexified M^8 are coded by polynomials with rational coefficients involves the following open question.

{\bf Q}: Can one allow only polynomials with coefficients in Q or should one allow also coefficients in EQs?

The idea allowing to answer this question is the requirement that TGD adelic physics is able to represent all finite groups as Galois groups of Q or some EQ acting physical symmetry group.

If the answer to {\bf Q1} is positive, it is enough to have polynomials with coefficients in Q. It not, then also EQs are needed as coefficient fields for polynomials to get all Galois groups. The first option would be the more elegant one.

In the sequel the inverse problem is considered from the perspective of TGD. Galois groups, in particular simple Galois groups, play a fundamental role in the TGD view of cognition. The TGD based model of the genetic code involves in an essential manner the groups A_5 (icosahedron), which is the smallest simple and non-commutative group, and A_4 (tetrahedron). The identification of these groups as Galois groups leads to a more precise view about genetic code.