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**Algorithm 1** Old (simple) stable compound generator algorithm. We find reactions associated with a certain compound and take a combination of these reactions and switch them of. In reality we cannot switch off reactions, we have to remove genes. This is why this is just a simple version of the algorithm.

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1: procedure FINDREACTIONS(compound, model)
2:   hits  $\leftarrow \{ \}$ 
3:   r1  $\leftarrow [ ]$ 
4:   for r  $\in$  model.reactions do
      $\triangleright$  model.reactions gives a list of all reactions in the model. r loops over
       all these reactions
5:     if compound  $\in$  r.products  $\vee$  compound  $\in$  r.reactants then
      $\triangleright$  r.products is a list of all products produced by reaction and
       r.reactants is a list of all reactants of reaction r.
6:       r1.append(r)
7:     end if
8:   end for
9:   if length(r1) > 1 then
10:    combinations  $\leftarrow$  [comb(r1)]
     $\triangleright$  combinations is a list of lists. Each list in combinations contains a
      combination of reactions that are in r1
11:    genes  $\leftarrow \{ \}$ 
12:    for c  $\in$  combinations do
13:      for r  $\in$  c do
14:        r.flux  $\leftarrow$  0
15:      end for
16:      analyseModel(model)
17:      if growth > 0  $\wedge$  compound produced then
18:        if compound  $\in$  hits.keys() then
19:          hits[compound].append(c)
20:        else hits[compound]  $\leftarrow$  [c]
21:        end if
22:      end if
23:    end for
24:  end if
25: end procedure

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