

Algorithm: CHORUS(S, P, θ, τ)

Input X (Set of Variables), P (Quantitative trait variable), θ (Number of *combinations* to retain at each iteration of the search), τ (Number of iterations)

Output Q (*Collection of interacting combinations* and their *KWII*)

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1.  $Z \leftarrow \phi$ 
2. for each variable  $V \in X$  do
3.    $pai \leftarrow PAI(V, P)$ 
4.    $Z \leftarrow Z \cup \{V, pai\}$ 
5. endfor
6.  $S_1 \leftarrow$  Top  $\theta$  combinations from  $Z$  ranked by  $PAI$ 
7. for  $i \leftarrow 1$  to  $\tau$  do
8.    $Z \leftarrow \phi$ 
9.   for each variable  $V \in X$  do
10.    for each combination  $C \in S_i$  do
11.       $C \leftarrow C \cup \{V\}$ 
12.       $pai \leftarrow PAI(C, P)$ 
13.       $Z \leftarrow Z \cup \{C, pai\}$ 
14.    endfor
15.  endfor
16.   $S_{i+1} \leftarrow$  Top  $\theta$  combinations from  $Z$  ranked by  $PAI$ 
17. endfor
18.  $Q \leftarrow \phi$ 
19. for  $i \leftarrow 1$  to  $\tau$  do
20.   for each combination  $C \in S_i$  do
21.    for each  $v \subseteq C$  do
22.       $Q \leftarrow Q \cup \{v, KWII(v, P)\}$ 
23.    endfor
24.   endfor
25. endfor
26. return  $Q$ 
```