The (μ,λ)-ES

One generation transition function ((μ,λ)-selection):

$$opt_{(\mu,\lambda)-ES}(P^{(t)}) = \mathbf{sel}_{\mu}^{\lambda}(\sqcup_{i=1}^{\lambda}\{\mathbf{mut}(\mathbf{rec}(P^{(t)}))\})$$

ALGORITHM 2 $((\mu,\lambda)$-ES)

```
t := 0;
initialize P^(0) = {a_1, ..., a_μ} ∈ I^μ;
evaluate f(x_1), ..., f(x_μ);
while (T(P^(t)) = 0) do
    P̃ := ∅;
    for i := 1 to λ do
        (x̃, σ̃, α̃) := mut(rec(P^(t)));
        evaluate f(x̃);
        P̃ := P̃ ⊔ {(x̃, σ̃, α̃)};
    od
    P^(t+1) := sel_μ^λ(P̃);
    t := t + 1;
od
```

For $(\mu+\lambda)$-selection:

$$opt_{(\mu+\lambda)-ES}(P^{(t)}) = \mathbf{sel}_{\mu}^{\mu+\lambda}(\sqcup_{i=1}^{\lambda}\{\mathbf{mut}(\mathbf{rec}(P^{(t)}))\} \sqcup P^{(t)}) \quad .$$