```
DateString[]
```

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Wed 25 Jun 2014 15:24:49
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```
Clear["Global`*"]
```

Figure1:CoESS and Superinfection

Notebook pour résolution des CoESS pour différentes valeurs de σ

```
s[x_] := Smax/(1 + b Exp[-c x]) /. c -> σ1/σ^2 Smax/b /. b → Smax/σ - 1 /. Smax → 10 // Simplify;
para = β'[α] - (β[α] (1 - 2 h σ1))/(μ + α + γ + σ h);
hote2 = r'[γ] + (r[γ] - μ)/(μ + α + γ + h);
res = Solve[
 {0 == r[γ] (x + y) - (μ + (β[α] y)) x + γ y,
  0 == β[α] x y - (μ + α + γ) y}, {x, y}];
eqlib = res[[1]];
Ieq = y /. eqlib[[2]] /. α[w] → α /. γ[w] → γ /. β[w] → β[α];

β[α_] := β0 α / (1 + α)
r[γ_] := rm / (1 + c γ)

isop1 = (γ /. (Solve[0 == para /. h → β[α] Ieq, γ])[[1]]) // Simplify;
isop2 = (γ /. (Solve[0 == para /. h → β[α] Ieq, γ])[[2]]) // Simplify;
isoh = (γ /. Solve[0 == hote2 /. h → β[α] Ieq, γ])[[2]] // Simplify;
```

Résolution pour σ=0

```
plotvir = Plot[isop1 /. {c → 0.05, μ → 1, σ → 0, σ1 → 0, rm → 2},
    {α, 1, 5}, PlotStyle → {Black, Thickness[0.0035]}];
plotgam = Plot[isoh /. {c → 0.05, μ → 1, σ → 0, σ1 → 0, rm → 2},
    {α, 0, 10}, PlotStyle → {Black, Thickness[0.005]}];
```

Résolution pour σ=1

```
plotvir1 = Plot[isop1 /. {c → 0.05, μ → 1, σ → 1, σ1 → 0, rm → 2},
    {α, 1, 5}, PlotStyle → {Thickness[0.004], Dashed, Black} ];
```

Résolution pour σ=6

```
plotvir6 = Plot[isop1 /. {c → 0.05, μ → 1, σ → 6, σ1 → 0, r_m → 2},
    {α, 1, 5}, PlotStyle → {Thickness[0.004], DotDashed, Black} ];
```

Dessin de la figure

```
front = Plot[(rm / (μ + α[w]) - 1) / c /. {β0 → 10, c → 0.05, rm → 2, σ → 1, μ → 1},
    {α[w], 0, 4}, PlotStyle → {GrayLevel[0.8]}, PlotRange → {0, 8},
    Filling → Bottom, FillingStyle → GrayLevel[0.8]];
```