In [1]: `using DataFrames`

In [2]: `using Distributions`

In [3]: `using(Gadfly)`

200 SNP (=10 chromosomes * 20 SNP/chr)

In [4]: `SNP = convert(Array,readtable("/home/nicole/Jupyter/HERdata/data/Clean/newdata/ch1to10.200SNP.noID",separ`

Out[4]: 1442x200 Array{Int64,2}:
```
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  0  0  1  1  0  0  0  0  0  1  1
 0  0  1  0  1  0  1  1  0  1  1  0  0     1  0  1  0  1  1  0  1  1  0  1  1
 0  1  1  1  0  0  0  0  1  0  0  1  0     0  0  1  1  0  0  1  0  0  1  1  1
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  1  1  0  1  1  0  1  1  0  1  0
 1  1  0  1  1  1  1  1  0  1  1  0  1     1  0  1  1  0  1  0  0  0  0  0  1
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  0  0  1  0  1  1  0  0  1  0  1
 0  1  0  1  1  0  1  1  0  1  1  0  0     1  1  1  1  1  1  0  0  0  0  1  0
 1  1  0  1  1  0  1  1  0  1  1  0  0     1  0  0  0  1  1  0  0  0  1  0  1
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  0  0  1  1  0  0  0  0  0  1  1
 0  1  0  1  0  1  1  1  0  1  1  0  1     1  0  1  1  0  1  0  0  0  1  0  1
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  1  0  1  0  0  0  0  0  0  0  1
 0  1  0  1  1  0  0  0  1  0  0  1  1     1  1  1  0  1  1  0  1  1  0  1  0
 0  1  0  1  1  0  0  0  1  0  0  1  0     1  1  1  0  1  1  0  1  1  0  1  0
 ⋮              ⋮                 ⋮      ⋱        ⋮              ⋮
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  0  0  1  0  1  0  0  0  0  1  1
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  0  1  1  1  1  0  0  0  0  1  1
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  1  1  0  1  1  0  1  1  0  1  0
 0  1  0  1  1  1  1  1  0  1  1  0  1     1  1  1  0  1  1  0  1  1  0  1  0
 0  0  1  1  1  0  1  1  0  1  1  0  1     1  1  1  0  1  1  0  1  1  0  1  0
```

In [5]:
```
corSNP = cor(SNP)
nRows  = size(corSNP,1)
```

Out[5]: 200

In [6]: `LDSNP  = zeros(nRows-1,20);`
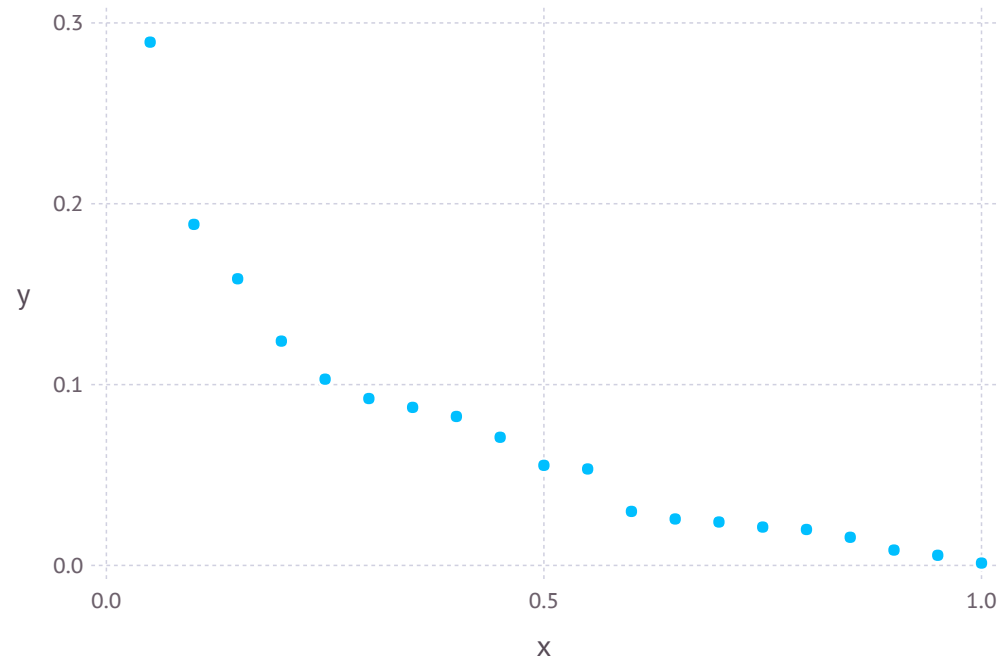
```
In [7]: for i = 1:(nRows-20)
            LDSNP[i,:] = corSNP[i,(i+1):(i+20)].^2
        end
```

```
In [8]: y = mean(LDSNP,1)
        sort(y,2)
```

```
Out[8]: 1x20 Array{Float64,2}:
         0.00133326  0.0056452  0.00852526  …  0.158537  0.188612  0.289392
```

```
In [9]: plot(x=(1:20)/20*1,y=y)
```

Out[9]:

2,000 SNP (=10 chromosomes * 200 SNP/chr)

In [10]: `SNP = convert(Array,readtable("/home/nicole/Jupyter/HERdata/data/Clean/newdata/ch1to10.2000SNP.noID",sepa`

Out[10]: 1442x2000 Array{Int64,2}:

```
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  1  1  1  1  1  1  1  0  0  1  1
 0  0  1  0  1  0  1  1  0  1  1  0  0     1  0  1  1  0  0  1  1  0  0  1  0
 0  1  1  1  0  0  0  0  1  0  0  1  0     1  0  1  1  0  0  0  0  0  1  0  0
 0  1  0  1  1  0  0  0  1  0  0  0  0     0  1  0  0  0  0  1  1  0  0  1  0
 1  1  0  1  1  1  1  1  0  1  1  0  1     1  0  1  1  1  1  1  1  0  0  1  1
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  0  1  0  0  0  1  1  0  0  1  1
 0  1  0  1  1  0  1  1  0  1  1  0  0     1  0  1  0  1  1  1  1  1  1  0  0
 1  1  0  1  1  0  1  1  0  1  1  0  0     0  1  0  0  0  0  1  1  0  0  1  0
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  0  1  0  0  1  1  1  0  0  1  1
 0  1  0  1  0  1  1  1  0  1  1  0  1     1  0  1  0  1  1  1  1  0  0  1  0
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  0  1  1  0  0  0  0  0  1  0  0
 0  1  0  1  1  0  0  0  1  0  0  1  1     1  0  1  1  0  0  0  0  0  1  0  0
 0  1  0  1  1  0  0  0  1  0  0  1  0     1  0  1  1  0  0  0  0  0  1  0  0
 ⋮                 ⋮                 ⋮           ⋱           ⋮                    ⋮
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  1  0  1  1  0  0  0  0  0  1  0  0
 0  1  0  1  1  0  0  0  1  0  0  0  0     0  1  0  0  0  0  1  1  0  0  1  0
 0  1  0  1  1  0  0  0  1  0  0  0  0     0  1  0  0  0  0  1  1  0  0  1  0
 0  1  0  1  1  1  1  1  0  1  1  0  1     0  1  0  0  0  0  1  1  0  0  1  0
 0  0  1  1  1  0  1  1  0  1  1  0  1     0  1  0  0  0  0  1  1  0  0  1  0
 0  1  0  1  1  0  0  0  1  0  0  0  0  …  0  1  0  0  0  0  1  1  0  0  1  0
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  1  1  1  0  1  1  1  0  0  1  0
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  0  1  1  0  0  0  0  0  1  0  0
 0  1  0  1  1  0  0  0  1  0  0  0  0     1  1  1  1  0  1  1  1  1  0  0  0
 0  0  1  1  1  1  1  1  0  1  1  0  1     1  1  1  1  0  1  1  1  1  0  0  0
 0  1  0  1  1  0  1  1  1  0  0  1  1  …  0  1  0  0  1  1  1  1  0  0  1  1
 0  1  0  1  1  0  0  0  1  0  0  1  1     0  1  0  0  1  1  1  1  0  0  1  1
```

In [11]:
```
corSNP = cor(SNP)
nRows  = size(corSNP,1)
```

Out[11]: 2000

In [12]: `LDSNP  = zeros(nRows-1,20);`

In [13]:
```
for i = 1:(nRows-20)
    LDSNP[i,:] = corSNP[i,(i+1):(i+20)].^2
end
```

In [14]: `y = mean(LDSNP,1)`
`sort(y,2)`

Out[14]: 1x20 Array{Float64,2}:
 0.073607 0.077073 0.0812765 0.0817273 … 0.171783 0.211088 0.300319

In [15]: `plot(x=(1:20)/20*1,y=y)`

Out[15]: