drawGenes, v. 0.4: Draw Genes from Coordinates

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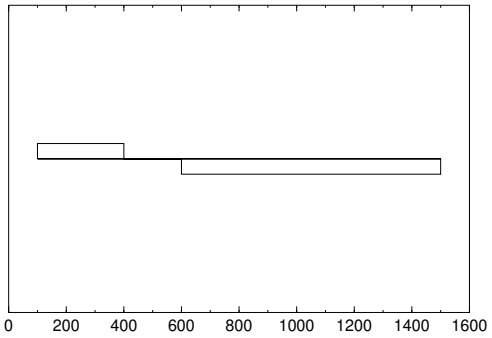
1 Introduction

Given the coordinates of two genes like

```
100     400     +
600     1500    -
```

drawGenes generates output that can then be visualized as



2 Getting Started

drawGenes was written in C on a computer running Linux and should work on any standard UNIX system. However, please contact me at haubold@evolbio.mpg.de if you have any problems with the program.

- Unpack the program

  ```
  tar -xvzf drawGenes_XXX.tgz
  ```

  where XXX indicates the version.

- Change into the newly created directory

  ```
  cd DrawGenes_XXX
  ```

  and list its contents

  ```
  ls
  ```

- Generate drawGenes

  ```
  make
  ```

- List its options

  ```
  ./drawGenes -h
  ```

- Test `drawGenes`

  ```
  drawGenes test.txt | graph -y -10 10 -N y -h 0.4 -T X
  ```

3 Listing

The following listing documents the driver program for `drawGenes`.

```
/***** drawGenes.c ******************************
 * Description:
 * Author: Bernhard Haubold, haubold@evolbio.mpg.de
 * Date: Thu Mar  2 14:53:17 2017
 ***************************************************/
#include <stdio.h>
#include <stdlib.h>
#include <limits.h>
#include "interface.h"
#include "eprintf.h"

void scanFile(FILE *fp, Args *args){
  int start, end, min, max;
  char strand;

  max = INT_MIN;
  min = INT_MAX;
  while(fscanf(fp,"%d\t%d\t%c", &start, &end, &strand) != EOF){
    if(strand == '+' || strand == '1')
      printf("%d\t0\n%d\t1\n%d\t1\n%d\t0\n",start,start,end,end);
    else if(strand == '-' || strand == '0')
      printf("%d\t0\n%d\t-1\n%d\t-1\n%d\t0\n",start,start,end,end);
    else{
      printf("Cannot␣recognize␣strand␣designation␣%c;␣please␣use␣+/-␣or␣
          1/2\n", strand);
      exit(-1);
    }
    if(max < end)
      max = end;
    if(min > start)
      min = start;
  }
  if(args->s != -1)
    min = args->s;
  if(args->s != -1)
    max = args->e;
  if(max > args->e)
    args->e = max;
  printf("%d\t0\n%d\t0\n",min,max);
}

int main(int argc, char *argv[]){
  int i;
```

```
    char *version;
    Args *args;
    FILE *fp;

    version = "0.3";
    setprogname2("drawGenes");
    args = getArgs(argc, argv);
    if(args->v)
      printSplash(version);
    if(args->h || args->E)
      printUsage(version);
    if(args->numInputFiles == 0){
      fp = stdin;
      scanFile(fp, args);
    }else{
      for(i=0;i<args->numInputFiles;i++){
        fp = efopen(args->inputFiles[i],"r");
        scanFile(fp, args);
        fclose(fp);
      }
    }
    free(args);
    free(progname());
    return 0;
}
```

4 Change Log

- Version 0.1 (March 3, 2017)
  - First working version.
- Version 0.2 (March 13, 2017)
  - Changed interface from `graph` to `gnuplot`.
- Version 0.3 (March 28, 2017)
  - Improved interface slightly.
- Version 0.4 (November 2, 2018)
  - Fixed bug in option handling in `interface.c`.